Drifting through landscapes: building on the tradition of the dérive through walking, drawing, and sensory experiences

by

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Approved by:

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Abstract

As professionals who strive to design walkable, engaging, and evocative places, landscape architects can benefit from understanding how people physically and emotionally experience places. Yet, landscape architects often design from afar – from their office chairs and computer screens, using remote sensing technologies to access site imagery and data. Architect Juhani Pallasma argues that in our increasingly digital world, we prioritize visual perception over other sensory modes, which "flattens our magnificent, multi-sensory, simultaneous, and synchronic capacities of imagination by turning the design process into a passive visual manipulation, a retinal journey" (Pallasmaa 2005, 12). This study aims to ground site research in human experience through a multisensory lens. In addition to walking and visual perception, this study also investigates how sound, smell, and touch shape our sense of place.

Based on the dérive, an exploratory walking method established by avant-garde artists in the 1950s (O'Rourke 2013), thirty-five student participants walked and explored various types of open spaces on a university campus. Participants were asked to take a twenty-minute walk within a four-week time frame. Each participant completed a trip diary, which included a short questionnaire, hand-drawn route map, sketch, and written descriptions of their sensory observations and emotional reactions.

The collected data was synthesized and analyzed through a series of composite graphics and maps. Prominent themes that emerged from the data were grouped by sensory mode. Visual observations, captured through sketches and written descriptions, were categorized into the three facets of place – location, materiality, and meaning – as defined by humanistic geographers (Williams 2014). Emotional responses from the participants were plotted onto an adapted version of Russell's (1998) circumplex model of emotion, revealing patterns between specific types of sensory experiences and emotions.

Overall, elements of nature – such as wind, water, and trees – stimulated all the senses that were studied and evoked mostly pleasant emotions. These relationships occurred in the main quad, practice stadium, along a creek, and in small, more intimate gardens or pathways. In contrast, mechanical and industrial sounds and smells – such as traffic or utilities – triggered unpleasant emotions. These relationships consistently aligned with streets, main corridors, and next to buildings and infrastructure, such as the parking garage or power plant.

Mixed or neutral emotions occurred in more enclosed, intimate spaces and were often not linked to specific causes. This finding suggests that participants may have recognized an emotional reaction, but not the cause. Similarly, they may have observed a sensory experience, but not its effect. Only 30% of the documented sensory observations were linked to an emotion. Furthermore, participants mapped sensory observations in major places on the campus – a main plaza, pedestrian corridor, and open lawn – but documented few or no emotional reactions. The absence of emotional indicators suggests that participants did not leave with strong impressions of these spaces.

This study contributes to the advancement of place research and environmental perception by bridging the two bodies of knowledge through unique methods of research. While most studies focus on one or two sensory modes, this study examines four out of the five main human senses. In doing so, the combined auditory and haptic experience produced by walking on different ground textures emerged from the data as a unique example of multimodal perception and sensory congruency. Furthermore, unlike many sensory studies that are conducted in research labs, this study was conducted in a real-world setting. Most importantly, this study not

only documents the variety of sensory observations, but also studies their relationship to human emotions. For place and sensory research to be more meaningful and applicable to the design profession, studies need to reflect human experiences in real places (Spence 2020).

Walking, drawing, and direct observation can lead to new discoveries and generate new knowledge. The site research and analysis methods developed from this study can be adapted for professional practice, community engagement, or design education curriculum. The nature of the research activities is open-ended and inviting to people of all backgrounds. Mapping the data reveals challenges and opportunities that are collectively identified and voiced by participants. Designers are uniquely positioned at the intersection of art and science, and have the skills to gather, synthesize, interpret, and graphically communicate both qualitative and quantitative information. Thus, the methods from this study can be incorporated into design education or professional practice to encourage designers to engage with the places they design for through both their minds and their bodies.



Drifting Through Landscapes

Building on the Tradition of the Dérive Through Walking, Drawing, and Sensory Experiences

Charling Chen, Spring 2023

Acknowledgements

Walking alongside someone who tends to meander is not an easy endeavor. They drift towards one side, and then the other — they take sudden turns, random pauses, and long detours. Meandering can be rewarding when done alone, but there are benefits to having others beside you. They notice things you wouldn't have noticed, warn you when there's a tripping hazard, and help you up when you do stumble and fall.

I would like to thank my exceptional committee – Blake Belanger, Jeff Smith, and Otto Chanyakorn – for not only enduring the twists and turns of my intellectual meanderings, but also for sharing their curiosity, insight, and enthusiasm along the way. I would also like to thank the LARCP faculty, who always kept their door open for me to wander through and sit down for a nice chat. I extend great thanks to the thirty-five students who volunteered to participate in my study collectively, they walked a total of fourteen and a half hours, and this research would have not been possible without them. Lastly, I am indebted to my family and friends for their love and support, which continually nurtures and fuels my personal growth and learning.

Drifting Through Landscapes: Building on the Tradition of the Dérive Through Walking, Drawing, and Sensory Experiences

Major Professor: Blake Belanger Supervising Committee: Dr. Jeffrey Smith and Adulsak Chanyakorn

Kansas State University College of Architecture, Planning & Design Department of Landscape Architecture and Regional & Community Planning

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Background

The title of this study – *Drifting Through Landscapes* – references the Situationists International, a group of avant-garde artists based in Paris in the 1950s. This group explored walking and mapping as ways to study how the built environment influences the human mind and behavior. They established their theory and practice as "psychogeography" and called their walking method a "dérive," which translates to "drift." On their walks, the Situationists observed ephemeral and emotional qualities of their surroundings, such as light, sound, ambience, human activity, and memories associated with place. Based on these observations, the artists produced graphics and reconfigured maps (Figure 1) to represent the pedestrian experience of the city (Careri 2002, Bassett 2004, O'Rourke 2013).

While the practice of psychogeography has primarily evolved into conceptual or performance art, its research continues in disciplines such as psychology, geography, and other humanities. There has been considerably less scholarship or application of the subject in landscape architecture. In their investigations on walking and environmental perception, landscape architects typically align themselves with the theories and methodologies of public life studies, which emerged in the 1960s. In reaction to urban renewal and car-centric planning, urban planners and designers became interested in use patterns, walkability, safety, and the visual qualities of streetscapes and public spaces (Lynch, 1960, Jacobs 1961, Cullen 1961, Gehl 1971, Whyte 1980, Appleyard 1981, Bosselmann 1998, Mehta 2013). In comparison to psychogeography, public life studies have evolved to produce maps and images that are more quantitative, descriptive, and applied directly to design.

Although their intent and approaches differ, psychogeography and public life studies share an interest in the lived experiences of the built environment. Both rely heavily on walking as a method, and produce maps and images that reflect human observation (Wood 2010). However, as remote sensing technologies advance in the twenty-first century and allow easy access to site imagery and data, design professionals spend less time engaging with the places they study and design for (Jenkins 2018). Without walking through a site, designers lack an understanding of how people would physically and emotionally experience a place. This lived experience is essential to the development of what humanistic geographers would define as "sense of place" (Tuan 1974, Relph 2008, Seamon 2015). Architect Juhani Pallasmaa argues for the need to address sense of place through multisensory architecture. He suggests that "qualities of space, matter, and scale are measured equally by the eye, ear, nose, skin, tongue, skeleton, and muscle" (Pallasmaa 2005, 41).

The integration of psychogeography, public life studies, and a multisensory approach to site research offers unique opportunities for landscape architects. Through primary research methods such as walking, drawing, and mapping sensory observations, designers can reconnect with their bodies and minds to understand places at a deeper level.



Figure 1: The Situationists explored interpretative forms of cartography to represent how pedestrians moved through and experienced the city (Debord 1957).

Purpose

Research Questions

The aim of this study is to ground site research in the human experience and investigate how our bodies and minds relate to our surroundings. The study answers the following research questions:

- How does walking shape our sense of place?
- How does drawing in situ reveal significant aspects of place?
- How do the human senses of sight, sound, smell, and touch evoke emotions?

Defining Sense of Place

"Place" is a simple, yet complex term that we use both colloquially and in scholarship. Place can refer to various contexts and scales – it can be a specific spot on a bookshelf, a home, or an entire city. When we use the term "place" – rather than "space" – we imply that a special interaction occurs between people and their setting at a particular location (Tuan 1977, Relph 2008, Cresswell 2004).

Landscape architecture is a discipline that prides itself in designing places – not just spaces. The distinction between these terms, however, is more widely discussed in the field of humanistic geography. Geographers such as Yi-fu Tuan (1974, 1977), Edward Relph (2008), Anne Buttimer (1976), David Seamon (1979), and Tim Cresswell (2004), have explored this subject in great depth. Concepts such as *place, sense of place, place attachment, place identity, and place-making,* have emerged from this body of knowledge and been incorporated into the research and application of various fields, including landscape architecture and planning (Williams 2014).

This study does not formally adopt one term over another, but rather builds upon general place concepts developed by geographers. The study focuses on "sense of place" and adds another dimension to the term by breaking it down. As shown in Figure 2, the study defines "sense" literally – as in the human senses of sight, sound, smell, and touch. While different scholars use varying terminology to describe the different facets of place, they generally conclude that places have three aspects – a unique, physical location, material form and features of the natural or built environment, and meaning when people form personal relationships and feelings towards these aspects (Williams 2014). This definition of "sense of place" not only provides a framework for this study, but also bridges the gap between place research, sensory research, and design.



Figure 2: "Sense of place" as defined by this study, built off place frameworks adopted from

Significance

The existing literature on walking, place theory, and sensory research is varied and extensive. Few studies cover such a wide breadth of knowledge and many investigations manfiest as a collection of anecdotes by one or several authors. In contrast, this study engages participants and analyzes data collectively, which can reveal patterns within human environmental perception. The approach and methods of this study are unique in the following three ways:

- The Study Examines Multiple Human Senses Multisensory studies are crucial to advancing our knowledge on how people react to environmental stimuli. Most studies focus on just one or two of the human senses but our response to the environment is almost always "the result of all our senses being stimulated, no matter whether we are aware of their influence or not" (Spence 2020, 4). Furthermore, a growing body of research in cognitive neuroscience shows that our senses "talk to one another," which suggests crossmodal interactions (Spence 2020). This study examines four out of the five main human senses – sight, sound, smell, and touch.
- The Study Occurs in Real-World Settings Many sensory studies are currently conducted in research labs and use simulation technology. However, these settings do not represent landscapes, which are open systems. Studies in controlled environments cannot directly translate to landscape design application because "there is still no clear consensus about the 'ecological validity' of laboratory experiments... It is not expected that a sample of participants would assess the investigated variables exactly as they would in a real site" (Aletta *et al.* 2016, 172). For multisensory research to be applicable for design practices, studies need to be situated in real-world settings.
- The Study Investigates the Relationship Between the Human Senses and Human Emotions – Various sensory studies focusing on landscapes or the built environment have mapped the sounds or smells of places through walking, but rarely elaborate on their influence on human emotions. This study connects sensory observations to human emotions, which deepens our understanding of cognitive processes and can help promote social and emotional wellbeing through design.

Project Overview

The remainder of this book provides greater depth into the investigation and intersection between the human senses, place, and design. Through primary research methods of walking, drawing, and mapping in situ, this study seeks to uncover relationships between landscape architecture and how people physically and emotionally experience places.

Chapter 02 presents the literature review in three parts. The first section describes the role of walking and psychogeography within the historical context of artistic movements in the twentieth century. The second section summarizes how interest in walkability and pedestrian life in urban planning emerged around the same time period. Section 3 discusses how landscape architecture draws from both approaches and backgrounds in its research and practice. The literature review is followed by an argumentation diagram, which provides the foundation for this study.

Chapter 03 describes the methodology of this study — its strategies, data collection methods, and the process of analyzing a large volume of complex, qualitative data.

Chapter 04 presents the findings of this study in multiple sections that align with the different components of the collected data, which includes a short questionnaire, hand-drawn sketches, sensory observations, and mappings. The data was synthesized and analyzed through a series of composite graphics and maps. These visuals reveal prominent themes and patterns in the participants' experiences and emotional reactions in specific places within the study area.

Chapter 05 summarizes the findings of this study and discusses its limitatons, potential for future research, and applications to the field of landscape architecture and planning.



Walking as Research **Research on Walkin** Walking & Research **Argumentation Diag**

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Walking as Research: Art & Psychogeography

As this chapter will illustrate, the Situationists and the concept of the dérive have served as inspiration for artists, designers, and other creative researchers and scholars in various fields of study. However, their work is often presented in isolation and the historical context becomes overshadowed by the playful, romantic notion of the dérive – the idea of drifting aimlessly through a city, exploring new places, and following one's own impulses. The Situationists, however, were an artistic *and political* group, and psychogeography was a practice *and a theory*. Like most political artists, the Situationists developed their work in response to the changes they were observing in society – in particular, changes brought on by post-war capitalism, consumerism, and modern life (Wood 2010). While this research does not focus on their political writings and activities, it acknowledges that their artistic work builds upon that foundation. The commonality between the Situationists and landscape architects, planners, geographers, and experts from other disciplines, is the curiosity to study and understand how people walk, perceive, and interact with their surroundings.

The Situationist International was comprised of radical artists, poets, and intellectuals, led by French philosopher Guy Debord. As shown in Figure 3, this group emerged from various avant-garde movements in the mid-nineteenth century, whose work marked a shift away from traditional artistic practices. Before the rise of Impressionism in the nineteenth century, artists typically worked indoors. Artists such as Monet, Renoir, Pissarro, Caillebotte, and many others began painting *en plein air* – in the outdoors, which introduced new subject matter in art. Figure 4 on the following page depicts how street life, pedestrians, movement, and temporal conditions became the focus of their paintings (Forgione 2005).

These new paintings of outdoor scenes reflected changes in the built environment that began a century earlier during Haussmann's renovation of Paris. The reconstruction transformed the city from a medieval labyrinth of narrow, disorienting streets to a network of wide boulevards, bridges, squares, and public spaces for pedestrians. In this context, walking became more appealing and an established social and cultural activity. This theme carried on into literature, specifically in French novels and poems that depicted the *flaneur* – a literary character that was portrayed as a carefree "male observer of the urban scene, taking pleasure in losing himself in the crowd and becoming a secret spectator of the changing spectacles of spaces and places in the city" (Bassett 2004, 398).

As artists observed pedestrians in various contexts, they moved away from traditional means of representing people in outdoor scenes and began using walking itself as a primary form of producing art. Thus, their role in the landscape changed from distant observer to participant. They wanted to emphasize the *experience* of walking and not only embarked on their own walks, but also invited the public to join them. This form of participatory art was prevalent among the Dadaists, Situationists, and Surrealists. Before these art movements, "the act of exploration and the acoustic, visual and tactile perception of urban spaces in transformation was not considered an aesthetic action in its own right" (Careri 2002, 72). This new approach to art prompted later art movements to explore diverse ways of walking and artmaking. These movements include conceptual art, land art, performance art, information and data art (O'Rourke 2013).



Information / Data Art

Land/Performance Art

2000

Figure 3: Timeline outlining the role of walking in art movements from the 20th century to the present (Chen 2023).



Auguste Renoir, Pont Neuf, Paris, 1872, oil on canvas.



Camille Pissarro, The Boulevard Montmatre at Night, 1897, oil on canvas.



Anna Halprin, Expositions, 1963, performance.

Richard Long, Line Made by Walking, 1967, photograph.







Francis Alys, Walk with leaking can of paint in Sao Paulo & Ghent, 1995, performance.

Figure 4: Evolution of art practices from depicting pedestrians to using walking as a method of producing art (Chen 2023).

Research on Walking: Public Life Studies

As the Situationists explored walking as a method of understanding the built environment, an interest in pedestrian life also emerged among urban planners in America in the 1960s, as shown in Figure 5. In reaction to urban renewal and car-centric planning, planners and designers focused on walkability, safety, use patterns, and the visual qualities of streetscapes and public spaces (Lynch 1960, Jacobs 1961, Cullen 1961, Gehl 1971, Whyte 1980, Appleyard 1981, Bosselmann 1998, Mehta 2013). Landscape architects typically align themselves with the theories and methodologies developed by planners, and prioritize capturing and communicating observations on the movement and behavior of pedestrians over their own personal experiences.

In his seminal work, *The Social Life of Small Urban Spaces*, William H. Whyte demonstrates how passive, direct observation of pedestrians can reveal patterns in how they interact with design elements in public spaces. He uses time-lapse cameras to document movement and changes over time (Whyte 1980). Whyte's interest, however, does not focus primarily on how people walk from one position to another, but rather on how they linger and form relationships to a place or to the people around them. Like other planners and designers, Whyte valued the pedestrian experience as a component in defining place.

In comparison to the Situationists, who were deeply rooted in the art and humanities, planners and designers produce maps and images that are more quantitative and applied directly to design. How artists or planners percieve their own role in society also shapes their approach and the intent of their work. Artists prioritize expression, particularly political and social expression for the Situationists, while planners often work with or alongside city officials. Despite the differences in their attitudes towards government, the Situationists and the planners of public life studies share a few commonalities. Both groups emerged from a deep dissatisfaction with post-war urban planning practices, which prompted their interests in pedestrian experiences and environmental perception. From a visual studies perspective, both groups produced iconic types of maps that reflect the lived experiences of places (Wood 2010). While Kevin Lynch's cognitive maps do not exclusively draw from walking experiences, they explore how people understand and relate to place. In more recent years, researchers have combined walking and cognitive mapping as a method to study place meaning among participants or communities (Smith & Aranha 2022).

In addition to new methods of mapping, planners and designers also explored new ways to represent the walking experience through drawing. In his book, *The Concise Townscape*, Gordon Cullen (1971) presents a series of sequential drawings that follow a walking path, showing the visual experience from the pedestrian perspective. Peter Bosselmann (1998) further developed this method of representing places, but also integrated the use of computer image technology and its application to proposed design projects. Bosselmann addresses the challenges and limitations of capturing the lived experience through visual representation, but nonetheless provides both conceptual and technical recommendations. Whether representing existing conditions or proposed designs, he emphasizes the importance of representing the *experience* of place (Bosselmann 1998).



New Urbanism

Post-Modern City

Greenbelts & Highways

2000

Figure 5: Public life studies emerged in reaction to urban renewal and influenced later urban planning practices (Chen 2023).

Walking & Research in Landscape Architecture

Landscape architects and planners are uniquely positioned as professionals that influence the design of places and thereby the experiences of people who use and walk through those places. However, when we discuss walking in relation to landscape architecture, it is important to distinguish between applying walking itself as a research method versus direct observation of pedestrians. The first approach involves the researcher or participants walking and documenting their experiences, typically resulting in qualitative data. In the second approach, the researcher often observes pedestrian movement and behavior or gathers surveys, typically resulting in quantitative data.

As shown in Figure 6, designers draw from both approaches throughout the design process, particularly during site visits and analysis. Walking the site confirms existing site conditions, but also allows for the discovery of new information. The physical interaction between the body and the environment — our engagement of our human senses — generates knowledge that can inform design decisions. When applicable, observations on how people currently use or walk through the site provide additional insight. Remote sensing technologies allow easy access to site imagery and data, but lack the ability to convey the human experience. Thus, designers can embrace the most basic, yet essential instruments they have — their bodies and their minds — to better understand the places and people they design for.

This study uses a mixed-methods approach, but focuses heavily on qualitative data due to its focus on human perception and emotions. Individually, participants gathered qualitative data, but when compiled and analyzed collectively, quantitative data was generated. The diagrams and maps found throughout this study help visualize both the qualitative and quantitative aspects of the collected data and convey participants' sense of place.

Approacnes t Walking as Research • Researcher or participants walk and document their experiences as data (e.g. ethnography) • Often qualitative • Common disciplines: • Visual Arts • History • Geography

AnthropologySociology

Figure 6: Design disciplines apply walking in various ways, and therefore it is important to distinguish between applying walking itself as a research method versus direct observation of pedestrians (Chen 2023).

Approaches to Walking Research



Argumentation Diagram

ENTHYMEME

Claim:

Walking, drawing, and documenting sensory observations in situ are invaluable methods of research to the landscape architecture discipline.

Reason:

Because these forms of primary research engage both the mind and the body, which provides site-specific information related to the human experience and sense of place.

GROUNDS

- Walking encourages exploration of the environment, which uncovers details, connections, questions, and other aspects of place that can inform site analysis and that would otherwise not have been discovered. (Stilgoe 1998, Girot 1999; Hester 2006; Foxley 2010; Schultz 2014; Jenkins 2018).
- Drawing is a selective, observational process that captures and strengthens someone's understanding of the unique qualities of a place (Pallasmaa 2005; Lavoie 2005).
- Sensory experiences derive from the specific conditions of place, and need to be documented and included in the design process.

WARRANT

Sense of place is knowledge and experience that cannot be obtained through other means besides physically engaging with the place.

BACKING

- Walking continuously changes people's perspectives and sharpens their senses, as they become more attune to the structures, processes, and atmosphere of their surroundings (Stilgoe 1998; Hester 2006; Foxley 2010).
- Drawing helps designers understand how objects relate to each other and to people through the dimensions of depth and time (Lavoie 2005).
- The sensory sources of sound, smell, and touch not only influence . the human experience of place, but also the experience of other organisms in the environment.

POSSIBLE REBUTTAL

- site context.
- Drawing and direct observation are outdated methods of available at the time of observation.
- Sensory experiences can be anticipated, generalized, and addressed in the design process without verification on site.

POSSIBLE REBUTTAL

- Sense of place is not a priority for every design project.
- The full range of physical, emotive, and multisensory experiences of a place are not necessary in the design process.
- Drawing and mapping are not skills accessible to everyone.

Figure 7: This study argues for the need and value of walking, drawing, mapping, and documenting direct observations in situ in the design discipline (Chen 2023).

Remote tools and technologies can simulate walking and provide a range of the available views that are sufficient information regarding

documentation in the practice and only capture information that is





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Methodology

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Research Strategies

Overview

This study investigates human experiences in landscapes, documented through drawings and written descriptions, which result in qualitative and open-ended data. Therefore, research methodologies such as grounded theory and arts-based research are appropriate methods for this study.

Grounded Theory

First developed in the 1960s, grounded theory has diverged into several subcategories of the methodology, but commonalities between them include using inductive reasoning, establishing a framework for the research process, and collecting and analyzing data in an iterative manner to develop and arrive at broader concepts or theories (Reiger 2018). This study follows the constructivist grounded theory (CGT) approach, which values the researcher's experience in the process, acknowledges subjectivity, and allows for flexible data analysis procedures based on the collected data. CGT looks for themes and patterns, allowing the data to speak for itself, and does not attempt to prove causation but rather to understand abstract concepts and relationships (Reiger 2018).

Arts-Based Research

Arts-based research (ABR) uses the creative arts to explore unique ways of knowing. This generative, practice-based approach stems from the belief that through the process of making art, unexpected outcomes and knowledge of self and others within a specific context can emerge (Leavy 2017). ABR values preverbal or multiple ways of knowing that include sensory, emotional, perceptual, kinesthetic, and embodied knowledge, which align well with the focus of this study on walkiing, drawing and the human senses. Data analysis includes the integration of a framework from place theory to help structure the interpretation of the drawings produced for this study.

Grounded Theory Uses inductive reasoning, starting from the data Iterative process of collecting or analyzing data Identifies themes and patterns that lead to broader concepts and theories Ackr subjection

•





Figure 8: Grounded theory and arts-based research align with nature of this study, which focuses on

Research Methods

Study Area

This study was conducted on the Kansas State University campus, which provided a park-like setting and a variety of landscape conditions. The main campus area was divided into six zones that were each approximately 25 acres. As shown in Figure 10, the boundaries of the zones follow main pathways or roads within the campus. Major roads border the edge of the east, south, and west boundaries of the entire study area, and the campus transitions to a large parking lot and student dormitories to the north.

Participant Population

The study's participant population focused on design students from the College of Architecture, Planning, and Design. A total of thirty-five students volunteered to participate in the study. The participants were second-year students or above, all of whom had previous experience with drawing through their coursework. As shown in Figure 9, fifteen participants (43%) identified as men, nineteen participants (54%) identified as women, and one participant (3%) preferred not to disclose this information.







Figure 9: A total of thirty-five design students volunteered to participante in the study (Chen 2023).

Figure 10: Participants were randomly assigned to one of six zones within the study area, each of which cover an area

Research Methods

Data Collection

Researchers conducting studies related to walking use various methods of collecting data, which include field study, direct observation, surveys, interviews, walking interviews, trip diaries, video-based analysis, and GPS tracking (Millonig et al. 2009). Each method has its own advantages and disadvantages, and yields different types and forms of information. This study focuses on qualitative data and hybridizes the questionnaire and trip diary format to collect relevant information from participants.

Trip Diary

For this study, a trip diary was designed and developed to guide participants on their walk. As shown in Figure 11, the diary included a short pre- and post-walk questionnaire, a sensory observation and mapping exercise, and a drawing and writing component. Six different versions of the trip diary was created, each with a different enlarged map to represent the six zones of the study area. Participants were randomly given one of the six versions so that zones were randomly assigned. Participants completed their trip diaries by hand on paper booklets. The questionnaire provided multiple-choice answers, but also included an option for participants to add open-ended answers.

The researcher recognized that the trip diary could have been completed digitally on tablets, and that walking routes could have been recorded using GPS phone tracking applications. In a preliminary study, found in Appendix D, the researcher explored these methods of data collection. However, an analog method was chosen to avoid potential issues with participants' accessibility to the technology, and to avoid inconsistencies in the results between their personal devices. In addition, analog methods allow these methods to be adopted or modified by other researchers that may have limited resources.

No formal enrollment for participants was implemented for this study. Students were invited to participate by being given hard copies of the trip diary and a verbal description of the study's intent, which was also described in written form in the trip diary. Participants were instructed to anonymously submit their responses in a designated tray at a main office, rather than submiting them directly to the researcher.

1. Pre-Walk Questionnaire



2. Sensory Observations & Mapping



Figure 11: Example of a participant trip diary (Chen 2023). See Appendix B for enlarged version of trip diary.

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Research Methods

Data Collection

Weather Conditions

Participants were asked to take a walk in their assigned zone within a fourweek timeframe. As shown in Figure 12, the local weather during this time was mostly sunny and dry, with temperatures that rose to a high of 89° F and dropped to a low of 19° F. The average temperature during this period was 54° F. Characteristic of the region, wind speed rose to 30 mph, but averaged to 7 mph (WeatherUnderground 2023).

Timing of Walks

As shown in Figure 12, most participants took their walks in the mid-afternoon, between two and four o'clock in the afternoon. The instructions of the trip diary suggested that participants spend approximately 20 minutes on their walk, but walk durations varied from 15 to 45 minutes. The average duration, however, was 25 minutes. Based on the pre-walk questionnaire, all participants had walked through their assigned zone at least once, which indicates that for the study, they walked through an environment in which they had a basic level of familiarity.

Local Weather of Study Area - October 2022

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURD
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						**
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Figure 12: Participants took their walks within a four-week timeframe, during which the weather conditions were mostly dry and sunny. Most participants took an average of a 25 minute walk during the mid-afternoon (Chen 2023).







Data Analysis

Collected data from the participants' trip diaries was synthesized and analyzed through the production of a series of graphics and maps. The contents from the trip diaries were entered into computer software programs, such as Microsoft Excel spreadsheets and Adobe Creative Suite. The data was then sorted by the human senses of sight, sound, smell, and touch.

Written Descriptions

Written descriptions were first separated into units and assigned to a category and a subcategory to provide more details and nuanced distinctions. For drawing descriptions, categories were determined by a place theory framework. Categories for sound, smell, and touch observations loosely followed a conventional classification system for soundscape research. Because this study is multisensory, the categories were modified to encompass data across the different sensory modes and to relate more directly to programmatic design elements in landscape architecture. Using the defined categories and subcategories, pivot tables and pie charts were created to quantify the frequency of reoccurring observations. These pivot tables can be found in Appendix C.

Emotions

To relate the sensory observations to emotional responses that appeared in the data, an emotion model was selected for analysis. The field of psychology has developed various emotion models that are used in research or practice (Thomson and Crocker 2013). This study adapted a dimensional version, specifically Russell's 1980 circumplex model, shown in Figure 13. The x-axis on the model signifies a spectrum from unpleasant to pleasant, while the y-axis represents levels of activation. This structure forms relationships between opposite emotions across different quadrants (Yarwood 2022). Emotion words in the collected data were identified and plotted on the model, with the text incrementally increasing in size with relation to how frequently they appeared in the data set, resulting in a word cloud diagram.

Mappings

Lastly, all the mapped data provided by participants were compiled into a series of composite maps. Different types of data were layered onto the maps to analyze where clusters of sensory observations and emotional reactions occurred.



Figure 13: Reproduction and annotation of Russell's circumplex model of emotions (Chen 2023).



Overview..... Questionnai Defining Pla The Sound of The Smell of The Haptic S The Ground Mapping Se

Findings

	35
re	37
ce Through Drawing	40
of Place	68
f Place	82
Sense of Place	94
Textures of Place	104
nse of Place	114

Overview

The collected data from this study includes various components and therefore findings are presented in multiple sections. After reviewing the findings from the short pre- and post-walk questionnaire, the remaining sections of the chapter each focus on a specific human sense. As shown in Figure 14, the sensory observations in this study are extensive — a total of 347 observations (not including the drawings) were documented by participants, which averages to 10 observations per participant.



Figure 14: Participants documented a total of 347 sensory observations.

Section 01 examines how drawing in situ highlights how individuals relate to specific aspects of place through visual observation.

Section 02 presents the findings on sound observations, which constitutes half of the data set.

Section 03 discusses participants' observations on smells.

Section 04 explores the sense of touch or haptic experiences that were documented by participants.

Section 05 focuses on the multisensory experience of walking on different ground textures, which produces both sound and haptic experiences.

Section 06 synthesizes the previous sections through mapping and examines how sensory experiences relate to human emotion.



area, which is reflected in the resulting map (Chen 2023).

Figure 15: Participants' walking routes show how they explored various places within the study area. The lineweights of the routes reflect the number of participants that walked that segment of the path. Eight participants (23%) did not draw their route on their map. Seven of these eight participants were assigned to zones on the southern half of the study

Questionnaire

Walking Develops Familiarity with Place

Based on the questionnaire, all participants had previously walked through their assigned zone at least once, indicating they had a basic level of familiarity with their surroundings. After taking their assigned walk, 24 of the 35 participants (69%) felt more familiar with the places they had walked through. The three participants that did not feel more familiarity after the walk already frequently passed through their zone. The five participants that felt indifferent had varying ranges of previous exposure to their zone, and two participants did not share this information.

Walking Can Encourage Future Exploration of Place

When asked if they would want to take future walks in the same zone, 24 participants (69%) answered "yes." However, these 24 participants were not the same 24 participants from the previous question that felt more familiarity after their walk — only 19 participants (54%) answered "yes" to both questions. Thus, increased familiarity with a place may contribute, but most likely along with other factors, to the participants' desire to take future walks in the same area.

Walking Can Foster Positive Emotions

Compared to before they took a walk, nearly all the participants felt more relaxed and/or energized. Of the 35 participants, 24 participants (69%) felt more relaxed, 5 participants felt more energized (14%), and 4 participants (11%) felt both. One of these four participants also felt tired. One participant felt the same and another stated that they felt cold. All questionnaire responses, with exception to the last response, were answered through a multipe-choice answer format, with an option to fill in open-ended answers.

Walking and Sense of Place

As shown in Figure 16, most participants (94%) expressed positive emotions from taking walks through the campus. This finding resembles the type of data commonly found in studies on walking. However, this information does not always provide enough context to inform landscape architects and planners why people feel this way or how to design better, more walkable places. Thus, the participants' trip diaries provide more insight into their walking experience, emotions, and sense of place.









in the same area (Chen 2023).

Figure 16: Based on the participants' responses to the questionnaire, most participants felt more familliar with the places they explored on foot, felt positive emotions after their walk, and would want to take future walks

Defining Place Through Drawing

Architect Juhani Pallasmaa describes how drawing by hand strengthens the relationship between our internal and external world. The object (or place) "is simultaneously held in the hand and inside the head, and the imagined and projected physical image is modelled by our bodies" (Pallasmaa 2005, 12-13). Drawing in situ, in particular, helps us develop deeper understandings of how objects relate to each other not only spatially, but also through the dimensions of depth and time. Drawings focus our attention and require us to make decisions about framing and composition. They are the direct result of our responses to our physical senses. Climatic factors, such as temperature and wind, influence our comfort and positioning within the landscape. As we walk around a place, we become familiar with its ground texture and terrain (Lavoie 2005). Sounds and smells immerse us into the environment, as we capture on paper the qualities of the place that feel most unique to us.

Drawings & Written Descriptions

Thirty-four of the thirty-five participants provided a quick, five-minute sketch from their walk, to capture their impressions of their surroundings or document aspects which they found interesting. As shown below in Figure 17, participants also provided short, written descriptions to accompany their drawings and to reflect upon their observations.



A place to sit and [it was] quiet.



portion of the area quiet and calming, daily, but not in the unlike some of the last year since these retaining walls were implemented. The sunlight was filtering through the trees and the leaves were blowing, and it was



The space that connects along the whole of campus but also makes me feel unsafe from people and vehicles. me how little people choose to bike.

A section of bike It's [a scene] I enjoy to racks. I chose this look at each day and because of all the watch as it changes spots available only throughout. 3 are taken. Reminds







I like the building and bald cypress tree.

25

The strong presence of nature on campus made this road stand out. The trees were calming but also framed the drive.

l see it every day, it's a

constant reminder of

what I'm here to do.

I sketched the large trees and shaded area east of the business building because I have not been there before.



It is a place I've never really noticed, and it looks like a nice place to come

Sycamore tree beautiful white bark in sun. Limestone building.

other sites.



I chose this view because there aren't a lot of people around architecture of the and I think the age of this tree is really interesting.



of the grasses, the building, and the trees burr oak. Had never that are losing their leaves because of all. off of sidewalk by



Drew where someone This is my favorite attached tiny doors to tree on the guad, the the gnarled roots of a shumard oak so that noticed it before - just stunning fall color and immaculate form.

Hale.

17

wind.

I saw two rows of

trees forming cover

overhead and loved

watching the leaves

float down from the





I liked how the plants

and building combine

and the window.





27

There was a table to the view of the Union sit at to draw. and grass.

I liked the location and I enjoyed the contrasting of the curves and the simplicity of the space.

explored on their walks (Chen 2023).



It (sculpture) was something that I had never seen before and felt odd.



pecan tree.

I went looking for This space was pecans, but only empty and enclosed. found one and did not It interested me see any in the tree. hecause it was l met a friend and beautiful but unused. chatted beneath the



I love the tree. The campus has some areat trees.

Crow on a lamp post; sense of mystery





It was strikingly pretty

with ivy growing on

the distinctly unique

architecture.





It was by the president's house and was aesthetically pleasing, shaded, relaxing, and overall a nice area.



On this path, shrubs are overgrown, pushing people to one side of the sidewalk - it's hard for groups to pass.



It feels secluded and hidden from the rest of the campus. Interesting shadows cast.



The tree in the center of the meadow had very striking foliage color just at the top of the canopy, it was unique.



There was a chair nearby.



I have a distinct memory of sitting under stadium - would this awning during a wildcat warmup and have always loved the wood texture.



Top of memorial be a great place to watch sunset; most memorable part of walk

Figure 17: Through their sketches and written descriptions, participants elaborated on their visual observations of the places they

Drawings by Zone

Zone A



Zone B



Zone C



Zone D



Zone E



Zone F





16 19 20 = Sketches that were not mapped by participants.

Figure 18: Participants chose scenes from along their walking routes to illustrate their impressions of place or things they found visually interesting (Chen 2023).

Place Framework and Themes

Participants' drawings and written descriptions reveal deeper insight into their walking experiences and relationship to place. As shown in Figure 19, a place theory framework was used to identify and organize place aspects that emerged from the collected data. While different scholars use varying terminology to describe the different facets of place, they generally conclude that places have three aspects – a unique, physical location, material form and features of the natural or built environment, and meaning when people form personal relationships and feelings towards these aspects (Williams 2014). Social scientist Daniel R. Williams (2014) builds upon the third facet of place - meaning - and describes four levels meaning that vary on a gradient from general, tangible, and widely shared experiences to deeper, personal meaning.

The most surface-level meaning is **inherent meaning**, which refers to general conditions or material properties that most people would objectively percieve. Next, instrumental meaning relates to material properties of a place that help satisfy desires or needs of an individual. While someone's desires or needs are subjective, the relationship between a place feature and its potential to fulfill a goal can be objectively identified. **Sociocultural meaning** is formed through the way groups of people interact with material features or with each other in a specific location and context. These relationships can be observed through daily interactions and reveal shared norms or expectations of place. Personal meaning is the deepest and most subjective layer of place meaning. It includes the emotions we feel, memories, and anything that relates place to our identity and sense of self (Williams 2014).

The overarching place framework, along with these four layers of place meaning, shown in Figure 19, provide a structure to interpret the participants' drawings and their relationship to the places they explored. Their written descriptions were separated into units, categorized into a place facet, and assigned a theme. This process of coding was organized through pivot tables, which can be found in Appendix C.



Figure 19: Themes that emerged from participant sketches were grouped according to a place theory framework







I see it every day, it's a constant reminder of what I'm here to do.

I enjoy to look at each day and watch as it changes throughout.

Routine & Discovery

The first fundamental aspect of place is its physical, geographic location (Cresswell 2004, Williams 2014). Individuals may vary in the way they define the boundaries of place, based on their personal understanding and experiences. As shown in Figure 20, some participants chose to draw and observe familiar scenes from their everyday routine. Their repeated encounters of a specific location formed strong impressions. In Drawing 26, the scene that depicts a building and the surrounding landscape serves as a constant reminder to the participant (a design student) of their chosen discipline of study and their purpose at the university.

In addition to routine, discovery is another theme that emerges from the participants' responses. In Drawing 6, the participant enjoys noticing change over time. In Drawing 3, the participant discovers new retaining walls along a path that used to be part of their daily walk. In other instances, such as Drawing 7 and 21, people felt compelled to show places that they had never explored. Other participants drew objects they had never noticed before, such as a miniature fairy house, subtly embedded into tree roots (Drawing 11) or a large, upright sculpture among a wooded area (Drawing 13). Whether as part of their daily routines or explorations of new walking routes, the participants' impressions of place are inherently tied to specific locations.



It is a place I've never really noticed, and it looks like a nice place to come.

I have not been there before.

21





Drew where someone attached tiny doors to the gnarled roots of a burr oak. Had never noticed it before - just off of sidewalk by Hale.

never seen before and felt odd.

Figure 20: Participants drew hidden spots they had never been to or unique objects they had never noticed before (Chen 2023).





I used to walk this portion of the area daily, but not in the last year since these retaining walls were *implemented.* The sunlight was filtering through the trees and the leaves were blowing, and it was nice.



I sketched the large trees and shaded area east of the business building because

It was something that **I had**



Trees

Materiality — the natural or built forms and features in a setting — constitutes the second aspect of place (Cresswell 2004; Williams 2014). As shown in Figure 21, many of the participants' drawings depict trees as prominent features. While this observation likely reflects the biases of some participants, who were landscape architecture students, they nonetheless demonstrate the concept of biophilia our innate human instinct to connect with nature (Rosely et al. 2014). Of the 34 participants that provided drawings, 12 participants (34%) wrote about a specific tree or group of trees. Eight of the tree drawings feature a unique tree (Drawings 8, 9, 10, 12, 14, 16, 19, 28). Participants were attracted to distinct features of their tree, such as its bark, nuts, foliage, color, or age. These features were described as "beautiful, stunning, striking, immaculate, interesting, and unique." Participants also expressed strong, personal bonds with the tree, using phrases such as "I like, I love, and my favorite."

Four of the tree drawings depict groups of trees or tree-lined paths. Drawings 3 and 17 describe the movement of the trees blowing in the wind and the leaves floating down to the ground. Drawings 17 and 20 both depict how two rows of trees form a large mass of canopy overhead and help frame the view. Drawing 20 and 21 are two of the only three drawings in the entire data set that show people in the scene. In these two drawings, the relative size of the figures, compared to the trees, convey the trees' dominating presence at these locations. The whole collection of these tree drawings and descriptions illustrate how trees provide a variety of visual qualities that engage our attention and bring delight to our experience of a place.





Sycamore tree - beautiful white bark in sun. Natural limestone building.

I chose this view because there aren't a lot of people around and I think the age of this tree is really interesting.





has some great trees.

I went looking for pecans, but only found one and did not see any in the tree. I met a friend and chatted beneath the pecan tree.





I used to walk this portion of the area daily, but not in the last year since these retaining walls were implemented. The **sunlight** was filtering through the trees and the leaves were blowing, and it was nice.



Figure 21: Many participants drew and described distinct features of a specific tree or visual qualities of a group of trees (Chen 2023).





I liked the colors of the grasses, the architecture of the building, and the **trees** that are losing their leaves because of fall.



This is **my favorite tree on** the quad, the shumard oak so that is why I drew it. It has stunning fall color and immaculate form.





| love the tree. The campus

I like the building and bald cypress tree.



The tree in the center of the meadow had verv striking foliage color just at the top of the canopy, it was **unique**.



The strong presence of nature on campus made this road stand out. The trees were calming but also framed the drive.



I sketched the large trees and shaded area east of the business building because I have not been there before.




Sycamore tree - beautiful white bark in sun. Natural limestone building.

I liked the colors of the Top of memorial stadium grasses, the architecture of - would be a great place the building, and the trees to watch sunset; most that are losing their leaves memorable part of walk. because of fall.

Buildings

Participants of the study also included buildings in their drawings, as shown in Figure 22. Drawing 8, 10, and 34 depict or describe the natural limestone, glass, and building materials found throughout the campus, which defines the university's architectural style. In Drawing 33, the participant describes a past memory and reflects on how they "have always loved the wood texture" on the underside of an awning. Drawings 19 and 21 frame walking paths that lead up to the newer, more contemporary, business building. Drawings 25 and 27 focus on the university chapel, a house-like structure that is smaller in scale, compared to most buildings in the study area. Collectively, these drawings highlight architectural features and their materiality, which are unique to the university's campus.





I like the building and bald cypress tree.

I sketched the large trees and shaded area east of the business building because I have not been there before.





I liked how the plants and building combine and the window.

It was strikingly pretty with ivy growing on the **distinctly** unique architecture.

27

Figure 22: Participant sketches illustrate the variety of building materials and structural features found throughout the campus architecture (Chen 2023).







I have a distinct memory of sitting under this **awning** during a wildcat warmup and have always loved the wood texture.







Overall Appeal

Inherent meaning refers to general properties or conditions of place that most people would objectively perceive (Williams 2014). While inherent meaning may reflect material features, it differs from the Materiality aspect of place in that it begins to describe our general impressions of a place. For example, in Drawings 3 and 7 of Figure 23, participants describe their scenes as "nice." While some people may argue that this observation should be considered a personal preference, the concept of inherent meaning derives from theories in environmental psychology and assumes that human perceptual systems have evolved to notice specific types of information in the environment that may be beneficial to us. Thus, certain relationships between human and the environment can transcend personal or cultural preferences and be considered preferred or pleasant based on material properties that can be objectively identified (Williams 2014). In Drawings 30 and 31, participants use phrases such as "I like" and "I enjoyed," which express personal preference. Regardless of the terminology that they use, all four participant address the overall appeal of view they chose to draw. Drawings 3, 7, 30, 31 illustrate scenes that visually appealed to participants.



I used to walk this portion of the area daily, but not in the last year since these retaining walls were implemented. The sunlight was filtering through the trees and the leaves were blowing, and it was nice.



I liked the location and the view of the Union and grass.

It is a place I've never really noticed, and it looks like a nice place to come.

I enjoyed the contrasting of the curves and the simplicity of the space.

Figure 23: Participants illustrate and describe visual qualities of places along their walk that appealed them (Chen 2023).



Shade

Instrumental meaning relates to material properties of a place that help satisfy desires and needs of an individual (Williams 2014). While several of the participants' drawings show areas shaded by trees, Drawings 21 and 22 of Figure 24 call out this aspect in their drawings. Participants inherently gravitated towards shaded conditions — behavior that relates to the comfort of our physical bodies.

Seating

In Drawings 1, 2, 29, and 32, participants drew scenes based on where they could find a bench to sit on. In Figure 24, while the participants in Drawing 1 and 2 also comment on how quiet their particular spots were, the participants in Drawing 29 and 32 do not offer additional information to explain their view selection.

Foraging

In Drawing 14 of Figure 24, the participant drew a tree, which they attempted to forage pecans from. As demonstrated in this particular instance, instrumental meaning can be subjective and contextual, but the relationship between the features, such as the bench or the pecan tree, and their potential to fulfill the needs or goals of an individual can be objectively identified.



I sketched the large trees and **shaded area** east of the business building because I have not been there before.

It was by the president's house and was aesthetically pleasing, **shaded**, relaxing, and overall a nice area.





A place to sit and [it was] quiet.

Was sitting on a bench and it was quiet and calming, unlike some of the other sites.



I went looking for pecans, but only found one and did not see any in the tree. I met a friend and chatted beneath the pecan tree.

Figure 24: While some participants were attracted to shaded areas, others looked for places to sit and draw. One participant was motivated by foraging for pecans (Chen 2023).









There was **a chair nearby**.

There was a table to sit at to draw.



Walking Paths & Traffic

Sociocultural meaning is formed through the way groups of people interact with material features or with each other in a specific location and context (Williams 2014). This type of place meaning can be observed through daily interactions and reveal shared norms or expectations about a place. The study area focused only on campus grounds and participants of the study were university students. In Drawings 4 and 23 of Figure 25, both participants depict walking paths that are heavily used by students. The contrasts and similarities between the two drawings and observations are interesting. Despite showing a wide, empty, treelined walkway, the participant in Drawing 4 writes about an unpleasant experience due to the combination of pedestrian and vehicular traffic. Drawing 23, on the other hand, illustrates a narrow walking path, separated from a vehicular road, but pushed against planting that encroaches on the pathway. Despite very different physical conditions, both observations express difficult encounters that pedestrians experience in these places.

Unused Amenities

The lack of interaction in a place can also indicate sociocultural meaning. Two participants chose to draw amenities on campus that were not being used. In Figure 25, Drawing 15 depicts an empty seating area, while Drawing 5 illustrates a nearly empty bike rack. Both descriptions of the drawings hint at a slight disappointment of the unused amenities. The seating area is described as "beautiful but unused" and the bare bike racks remind the participant of "how little people choose to bike."



The space that connects along the whole of campus but also makes me **feel unsafe** from **people and** vehicles.



This space was **empty** and enclosed. It interested me because it was beautiful but unused.

Figure 25: Through their drawings, participants observe how people use or don't use certain walking paths and amenities on campus (Chen 2023).





On this path, shrubs are overgrown, **pushing** people to one side of the sidewalk - it's hard for groups to pass.





A section of bike racks. I chose this because of all the spots available only 3 are taken. **Reminds me** how little people choose to bike.



Sense of Self

Personal meaning is the deepest, but most subjective layer of place meaning (Williams 2014). It includes the emotions we feel, memories, and anything that relates place to our identity and sense of self. In Figure 26, Drawing 26 demonstrates this relationship between place and an individual's sense of self. The participant (a design student) describes how their surrounding built environment reminds them of their chosen discipline of study and their purpose at the university. Place, therefore, reinforces the student's identity — their interests, strengths, skills, or motivation, which influence their academic studies and future career.

Memories

In their written descriptions, some participants refer to past experiences that occurred in the specific places they sketched. In Drawing 3 of Figure 26, the participant notices a change in conditions while the participant in Drawing 33 focuses on something that is constant — the wood texture under the awning that they "have always loved." For other participants, their walks through campus formed new memories. In Drawing 14, the participant socializes with a friend, and in Drawing 34, the participant notes that watching the sunset from the top of the stadium was the "most memorable part" of the walk. These experiences, whether revisiting places that hold old memories or forming new memories, deepen individuals' connection to place.



I see it every day, it's a **constant reminder of what I'm here to do.**



I used to walk this portion of the area daily, but not in the last year since these retaining walls were implemented. The sunlight was filtering through the trees and the leaves were blowing, and it was nice.



I went looking for pecans, but only found one and did not see any in the tree. I met a friend and chatted beneath the pecan tree.

Figure 26: Participants described their memories and how they relate to their surroundings (Chen 2023).



I have **a distinct memory** of sitting under this awning during a wildcat warmup and have always loved the wood texture.





Top of memorial stadium - would be a great place to watch sunset; **most memorable part of walk.**





Emotion, Feeling, Mood

Emotions play a large role in personal meaning, which is our deepest level of place meaning (Williams 2014). The distinction between emotions, feelings, and moods, however, is not clearly defined among researchers and emotional theorists (Thomson and Crocker 2013). A "feeling", according to the American Psychological Association (2023), is a "self-contained phenomenal experience." Emotions involve feelings but manifest as reactions from engaging with the external world. The definition of "mood", however, is a term in which researchers diverge in their applications to emotion classification. The existing literature indicates a lack of consensus in researchers' approaches to identifying the cause or duration of a mood (Thomson and Crocker 2013).

In this study, the term "mood" is used in its colloquial, casual application of describing a distinctive atmosphere, such as in Drawings 18 and 24 of Figure 27. Both these drawings illustrate and describe murky, mysterious feelings based on visual cues in their surroundings, which are therefore considered emotions. For the purposes of this study, "emotion" serves as a collective term that describes the participants' subjective, affective experiences during their walks.

Crow on a lamp post; sense of mystery.



It feels **secluded and hidden** from the rest of the campus. **Interesting shadows cast.**

Figure 27: Two participants illustrate and describe murky, mysterious atmospheres that they encountered

Emotion Model

As with all the textual data that was collected from the participants' trip diaries, emotional descriptors were identified (Figure 29) and plotted on an adapted version of Russell's 1980 circumplex model (Figure 28). Participants used strong, vivid adjectives, such as "nice, pleasing, pretty, beautiful, stunning, interesting, unique, and striking." They also used phrases that reflected personal bonds and preferences, such as "enjoyed, like, love, and favorite." Only four participants felt more passive emotions, such as "calming, relaxed, or secluded." Two participants described specific objects in their drawings as "odd" or evoking a "sense of mystery." Only one participant described an unpleasant-active emotion of feeling "unsafe." Overall, visual observations from participant drawings were associated with pleasant-active emotions.











[I] was sitting on a filtering through the trees and the leaves were blowing, and it some of the other sites.

bench and it was quiet and **calming,** unlike





I chose this view

and I think the age

of this tree is really

interesting.

wind

was **nice.**

I liked the colors

because there aren't of the grasses, the a lot of people around architecture of the building, and the trees that are losing their leaves because of all.

This is my **favorite** tree on the quad, the shumard oak so that is why I drew it. It has stunning fall color and immaculate form.

12





I saw two rows of trees forming cover overhead and loved watching the leaves float down from the

Crow on a lamp post; sense of **mystery.**

I like the building and bald cypress tree.



27

I **liked** how the plants and building combine and the window.

It was strikingly pretty The tree in the center with ivy growing on the distinctly **unique** architecture.

of the meadow had very **striking** foliage color just at the top of the canopy, it was unique.

Figure 29: Sketches that expressed emotional descriptors in their written descriptions (Chen 2023).



connects along the whole of campus but





It is a place I've never really noticed, and it looks like a **nice** place to come



Sycamore tree beautiful white bark in sun. Limestone building.





It (sculpture) was something that I had never seen before and felt **odd.**



This space was empty and enclosed. It interested me because it was beautiful but unused.



I love the tree. The campus has some great trees.







The strong presence of nature on campus made this road stand out. The trees were calming but also framed the drive.



I liked the location and the view of the Union and grass.



It was by the president's house and was aesthetically pleasing, shaded, relaxing, and overall a cast. nice area



I enjoyed the contrasting of the curves and the simplicity of the space



It feels secluded and hidden from the rest of the campus. Interesting shadows



I have a distinct memory of sitting under this awning during a wildcat warmup and have always **loved** the wood texture.

Summary

Collectively, the participants' drawings and reflections reveal not only visual qualities of places, but also unique aspects related to their location, materiality, and meaning or relationship to people. Figure 30 shows the variety of themes that emerged from participant sketches and the frequency that each theme appeared in the data set. In summary, the drawing and writing component of the trip diary led to the following findings:

- Walking and Drawing Leads to New Discoveries Participants drew and • described hidden places or interesting objects that they had never noticed before.
- Drawing Highlights Materials and Elements of the Surrounding Environment Through drawing, participants focused on the materiality, textures, and ephmeral qualities of trees, buildings, and other elements in the natural and built environment.
- Drawing Encourages Observation of Social and Personal Relationships ٠ Participants noticed patterns of how others use or don't use certain places and amenities, and identified specific elements that they were personally drawn to.
- Walking and Drawing Cultivates Personal Connections to Place • Participants drew scenes that reminded them of their own identity, past memories, or elicited emotions. The majority of drawings and reflections were associated with pleasant emotions. Frequent indicators included words such as "like, love, interesting, striking, unique, and nice."





to a framework based on place theory (Chen 2023).

Figure 30: Themes that emerged from participant sketches were grouped according



The Sound of Place

The collection of sounds in an environment – or **soundscape** – is dynamic, continuous, and unique to each place. As we walk through a place, various sounds approach us from all directions and enter our ears in the form of air vibrations. Membranes, tissues, bones, and fibers translate the vibrations into nerve impulses that our brain then interprets. Our brain processes complex aspects about sound – its character, intensity, pitch, direction, and duration (Rodaway 1994; Stocker 2013). In the past, hearing has been described as a sensory mode that supports vision by providing unseen spatial information and aiding with orientation (Tuan 1974; Cullen 1980; Westerkamp 1988). More recently, however, some scholars argue that sound is more powerful than sight (Pallasmaa 2005, Stocker 2013). While a viewer's gaze is selective and directional, sound perception is not as discretional. Sounds surround us and literally penetrate us from all directions, evoking certain reactions from us and creating what Pallasmaa calls "an experience of interiority" (Pallasmaa 2005, 49).

Background

Human auditory perception of soundscapes has been studied extensively in disciplines such as urban planning, geography, environmental psychology, and music. Beginning in the 1960s, city planner Michael Southworth, along with Jane Jacobs, William H. Whyte, Gordon Cullen, Donald Appleyard, and Jan Gehl, addressed how urban sounds influence people's perception, interaction, and relationship with public spaces (Yildirim & Arefi 2022). The work of composer and educator Murray Schafer (1997) and the World Soundscapes Project developed a standardized vocabulary to describe and document auditory experiences, which eventually expanded into the specialized field of acoustic ecology. This discipline provides a framework to categorize sound sources into three types — biophony, geophony, and anthrophony. Biophony describes sounds created by organisms, geophony describes nonbiological sounds such as wind, rain, and thunder, while anthrophony includes sounds caused by humans (Pijanowski et al. 2011, 204). In addition to categorizing sound sources, researchers also distinguish sounds as wanted, unwanted (noise), or neutral - evaluations that depend on individual perception, social context, and sound quality. Preference also relates to the pleasant or unpleasant feelings and emotions that arise from the observed sounds (Wissmann 2013, 52-68).

Because sound is only one component of this multisensory study, the classification system for the collected data has been modified from the conventional soundscape categories to encompass data across different sensory modes. The modified categories relate more directly to programmatic design elements in landscape architecture, and include **Human Activity, Nature, and Machinery.** Subcategories provide more details and nuanced distinctions, and capture the variety of sound sources found in the data.

Relevant Terms

Acoustic Ecology - the study of relationships and interactions among humans and sounds in an environment (Pijanowski *et al.* 2011).

Noise - unintentional or unwanted sounds that may have negative effects to human health (Stocker 2013, 11; Sanchez *et al.* 2018).

Soundscape - an acoustic environment as perceived or experienced and/or understood by a person or people in context (Aletta *et al.* 2016, 165).

Sound Study Overview

Of all the sensory experiences documented by the participants in this study, sound was the most frequently observed. A total of 175 sound occurences were recorded, which constitutes 50% of the entire data set. As shown in Figure 30, these observations were categorized into **Human Activity** (12%), **Nature** (40%), **Machinery** (43%), and **Other** (5%). Subcategories with the highest frequency of occurences include **Wind-Trees-Leaves** (18%), **Motor Vehicles** (18%), **People Walking-Talking-Laughing** (9%), **Utilities** (9%), **Insects** (9%), **Birds** (7%), and **Maintenance Work** (7%).



Figure 30: Sound observations constitute half of the sensory data set, and the majority of sound sources were elements in nature or machinery (Chen 2023).

Human Activity

People Walking, Talking, & Laughing

Participants observed the sound of people walking and/or socializing 16 times, which constitutes 9% of the sound data set, as shown in Figure 31. In response to hearing these sounds, two participants reported that they felt "safe, comforted, pleased, and active." These observations align with the ideas of urban planners such as Jane Jacobs (1961), William H. Whyte (1980), and Jan Gehl (2011), who emphasize that social interactions in public spaces improve the perception of safety and quality of life. In Whyte's empirical study of human behavior in New York City's plazas, time lapse cameras showed how pedestrians gravitated towards crowds and joined street conversations. Whyte concluded that "what attracts people most, it would appear, is other people" (Whyte 1980, 19).

Music

The university's marching band was observed only twice during the study (1%), but the experience evoked strong emotions for one of the two participants. As this individual passed by a stadium, the music from the marching band not only "entertained" them, but also put them in a "reflective" mood as they reminisced on their past experiences in marching band. While context, sound quality, and individual preference play major roles in how music influences people's emotions, urban planners typically assume that music can positively change and uplift people's moods in public spaces (Jacobs 1961; Whyte 1980; Gehl 2011). In addition, research shows that the rhythm in music stimulates neurons in the brain, which can alter psychological states and therefore influence people's relationship to their surroundings (Wissmann 2014, 67).

Other

Other types of documented sounds that reflect human activity (2%) include the "jingle of keys, conflict between pedestrian and dog, person yelling/singing, and soccer players shouting." However, none of these observations elicited emotional reactions from the participants.



Key

written responses

Figure 31: Sounds of human activity, such as people walking, talking, or playing music, established a level of comfort or nostalgia for participants (Chen 2023).

Memories from participants

Nature

Wind, Trees, Leaves

Participants documented the sound of wind blowing on trees and/or leaves 31 times, which consitutes 18% of the sound data set, as shown in Figure 32. These results reflect not only the timing of the study during the autumn season, but also the characteristically windy weather of the flat, Midwest region. More than half of the observations described the trees and leaves to be "rustling" or skittering," indicating that the sound of the wind was percieved as relatively gentle when participants conducted their walks for the study. In response to the sound, participants felt "amazing, happy, peaceful, relaxed, calm, comforted, and nice." One participant noted that the rustling leaves reminded them of fall, their favorite season, and that the sound made them feel "like there's activity around me even without people, which is nice." However, one participant commented that the sound of wind alone caused them to feel "lonely and lost."

Wildlife: Insects, Birds, Squirrels

Participants documented sounds produced by wildlife a total of 34 times, which constitutes 19% of the sound data set. In response to hearing the sound of insects (9%), participants felt "calm, relaxed, away from school." The sound of bird calls (7%) caused some participants to feel "calm, at ease, or nostalgic," but also activated feelings of curiosity and being more alert. The sound of squirrels (3%), specifically of one "crashing through leaves," startled one participant.

The range of emotions and feelings evoked by sounds of wildlife reflect the variety of sounds that different animals species can produce. Participants described insect and bird sounds to be "humming, chirping" or as a "faint undertone." These descriptions imply that the quality of the sounds were soft and continuous. In contrast, descriptions of some bird calls also included "crows cawing", "birds going crazy", and "crazy sounds of really loud birds." Like the squirrel crashing through leaves, these descriptions suggest that unfamiliar and acute sounds induce more active responses, such as feeling curious or alert. The results of this study align with previous research on the overall positive, calming impact of bird sounds on human experiences, but they also suggest that the variety and nuances of wildlife sounds can unlock an even wider range of human emotions and feelings.



Water

Five participants documented the sound of moving water, which constitutes 3% of the sound data set. Four of the participants heard the sound from water features in plazas or courtyards, while one participant heard a creek. Participants near the water features noted that they felt "peaceful, relaxed, and calm." These comments demonstrate how water features are often strategically situated to enhance the ambience of public spaces (Whyte 1980, 48).

Machinery

Motor Vehicles

Since Donald Appleyard's empirical studies on the conditions of urban streets in the 1980s, road traffic continues to be the largest source of noise pollution in the built environment (Appleyard 1981, 62; Sanchez *et al.* 2018). As shown in Figure 33, Participants of this study documented the sound of cars and traffic 31 times, which consitutes 18% of the data set and ties with "Wind, Trees, and Leaves" as the theme with the highest frequency of observations. Yet, only four participants commented on how vehicular sounds made them feel "alert or unpleasant." The low count of reported feelings is likely due to the campus setting of the study area, which includes designated pedestrian zones and therefore a relatively low volume of vehicular traffic.

Utilities

Participants documented the sound of building utilities 15 times, which consitutes 9% of the data set. The sounds produced by heating and cooling units were described as a "buzz" or a "loud hissing," indicating participants felt negatively towards the sound. One participant stated that they felt "annoyed" while another was "surprised at how noisy" the building utilities sounded.

Maintenance Work

Participants documented the sound of maintenance work 12 times, which consitutes 9% of the data set. Various types of maintenance work were observed, including the sound of leaf blowers, lawn mowers, trucks, and construction. Interestingly, the only additional comments within this theme were responses to the sound of leaf blowers. One participant described it as "too loud" and another participant felt "annoyed and stressed."

Bikes, Scooters, & Skateboards

Participants observed the sound of bikes, scooters, and skateboards 10 times, which consitutes 6% of the data set. No emotions or feelings were affiliated with these observations.



Power Plant

The university's power plant, constructed in the 1920s, still provides energy for the campus and is located at the intersection of two main pedestrian pathways within the study area. Its unique sound was observed five times (3%) by five different participants, who described the sound as "humming, whirling, rumbles, oscillations", and exhaust noises." One participant felt "uncomfortable and distracted", adding that the sound was the "only thing [their] brain could focus on. Another participant noted that the sound's echo made them feel "small — like [they] were in a bowl." These observations indicate that participants felt negatively towards the sound produced by the power plant.

Figure 33: Mechanical and industrial sounds triggered unpleasant emotions (Chen 2023).

Other

Silence

Absolute silence, particularly in the outdoor environment, rarely exists. However, the absence of sounds or noises can influence the mood and atmosphere of a place, depending on its socio-cultural context. A quiet place can be calming or sacred, providing mental restoration and refuge (Wissmann 2013). Pallasmaa elaborates on how silence is a powerful experience that cancels out external noise and turns our attention inward - towards "our very existence...[making] us aware of our fundamental solitude" (Pallasmaa 2012, 55). Silence can also reflect grave or uneasy situations. The lack of sound implies the lack of human presence or other forms of life, which can impact our sense of safety (Yildirim & Arefi 2022). This dual meaning for silence was observed by one of the four participants that described a "quiet" space on their walk. As Figure 34 indicates, the participant described a narrow, intimate garden as "tranquil, yet inhuman."



Figure 34: The variety of observed sounds evoke a range of pleasant and unpleasant emotions (Chen

Summary

1 Human Activity

The sound of **People Walking, Talking, and Laughing** is reflected in 9% of the sound data set and participant responses reveal that this sound establishes a baseline level of feeling "comfortable, safe, and pleased." As shown in Figure 35, these emotions do not represent extreme levels of activation or deactiviation, nor pleasant or unpleasant feelings, and therefore fall near the center of the circumplex model. In response to **Music** from the university's marching band (1%), one participant reported feeling both "entertained" and "reflective." Entertainment excites the mind and body, while reflection typically implies a calmer state of being. Further investigation into the effect of music on people's sense of place in public spaces would be worthwhile.

2 Nature

The sound of **Wind, Trees and Leaves** ranks as the most frequently observed sound in this study (18%), alongside the sound of motor vehicles (18%). The sounds of wildlife, which include **Insects** (9%), **Birds** (7%), and **Squirrels** (3%), constitutes 19%, while the sound of **Water** reflects 3% of the sound data set. As shown in Figure 34, the majority of feelings and emotions evoked by nature sounds gravitate towards the pleasant side of the circumplex model. Most participants reported feeling "calm, relaxed, peaceful, happy, and nice" — restorative feelings that generally lower our levels of energy. In contrast, unfamiliar or acute sounds, such as sounds from wildlife, aroused more active responses of feeling "curious, alert, or startled." One participant observed that the sound of wind alone evoked unpleasant emotions, such as feeling "lonely and lost."

3 Machinery

Sounds produced by **Motor Vehicles** (18%), **Utilities** (9%), **Maintenance Work** (7%), and a **Power Plant** (3%) triggered unpleasant emotions, such as feeling "annoyed, uncomfortable, stressed, distracted, and small."



Figure 35: Plotting participants' emotional reactions on the dimensional emotion model reveals patterns in the data. The text size of the words incrementally increase with relation to how frequently they appear in the data, resulting in word cloud diagram (Chen 2023).

The Smell of Place

Smell can evoke strong emotions and memories of people and places, fusing together our experience of the past and present. As we walk through a place, smells flow through the air, enter our nasal cavity, and activate our olfactory receptors. The receptors then send neural impulses to the main part of our brain that processes emotions and memories (Xiao 2018, 241). This unique and direct connection to personal associations provides added layers of meaning to our sense of place. Furthermore, research studies have shown that smells also stimulate visual imagery (Xiao 2018, 242). As Pallasmaa points out, a particular smell "makes us unknowingly re-enter a space completely forgotten by retinal memory; the nostrils awaken a forgotten image...The nose makes the eye remember" (Pallasmaa 2005, 54).

Background

The concept of **smellscapes** emerged in the late 1970s, following the development of soundscape research (Rodaway 1996). Historically, smellscape studies were driven by sanitary campaigns that aimed to control and eliminate odors in cities. Over time, research has broadened to explore smells as a restorative element in urban environments or as therapeutic healing and sensory gardens (Xiao et al. 2014; Spence 2020). Smellscapes, however, are still relatively less explored compared to soundscapes due to their temporality, subjectivity, and difficulty to describe, document, or replicate. Technical devices are developing in the discipline, but prove to be insufficient in providing nuanced information (Xiao 2018, 248). Researchers, therefore, use the most practical, efficient instrument to detect and study our perception of smells in the environment - the human nose.

Smellscape studies rely on qualitative methods of research such as participant observations, typically documented through walking, mapping, and written descriptions. Researchers categorize smells by either chemical features or smell sources. Categories based on chemical features include "flowery, putrid, fruity, spicy, burnt, resinous" or other descriptors. These categories, however, do not provide information on people's perceptions of their surrounding environment. Categories based on smell sources, on the other hand, relate more directly to the context and physical setting of a place — its location, built form, and materials. Examples of these categories include "food, tobacco, waste, nature, traffic emissions, and synthetic odors." (Xiao 2018; Gao et al. 2022).

Because smell is only one component of this multisensory study, the classification system for the smellscape data has been modified to follow the categories established in the previous section, which includes Human Activity, Nature, and Machinery. A new category emerges from this data set as Material Surfaces. While it only encompasses a small portion of the data in this section, it expands and plays a larger role in the following sections.

Relevant Terms

Aroma - pleasant or positive smells (Rodaway 1996, 62).

Odor - unpleasant or negative smells (Rodaway 1996, 62).

Olfactory - the technical term that refers to both the action of smelling and the object producing the 'smell, odor, or aroma' (Rodaway 1996, 62).

Smellscape - the collection of perceived smells in an environment, explored through "smell walks and interpreted with "smell maps" (Xiao 2018, 240).

Smell Study Overview

Participants' smell observations constitute 12% of the entire data set, as shown in Figure 36. Of the total 44 smell observations, over two-thirds (65%) of the smells fall under the Nature category. The subcategories with the highest frequency of occurences include Plants (32%), Fallen Leaves (11%), Fresh Autumn Air (11%), the overall smell of Nature (9%). Participants also documented smells from Human Activity (20%), Machinery (10%), and Material Surfaces (4%).



Figure 36: Over two-thirds of the documented smell sources were from elements of Nature, while the remaining one-third of the data set included smells resulting from Human Activity, Machinery, and Material Surfaces (Chen 2023).

Human Activity

Participants documented an array of smells produced by human activity, which is reflected in 20% of the smell data set. As shown in Figure 37, these smells include food, smoke, cologne, laundry, fertilizer, trash, and sewage. One participant could not identify the source of a smell and simply recorded their disgust as "stinky." The few emotional reactions that participants documented for this theme were all negative feelings. One participant participant felt "annoyed" by the smell of cologne and another described the smell of sewage as "gross." The only memory that was described in this category was the smell assocation of fried food with "working at restaurants."



Key

written responses

Figure 37: Participants documented unpleasant emotions associated with smells resulting from Human Activity (Chen 2023).



Nature

Plants

Participants observed the smell of plants 14 times, which consitutes nearly onethird (32%) of the smell data set. As shown in Figure 38, half the participants referred to the general smell of plants while the other half specified plant types or parts such as "meadow plants", "grasses", "roses", "fruit", "pine needles", and "evergreen trees." The smell of plants brought upon emotions such as "calm" and "happy" for two participants. Two other participants described the smell of roses as "lovely, sweet, wonderful, and amazing." One participant felt hungry after smelling fruit, but another participant felt disgusted by the smell of ginkgo fruit, which they compared to the smell of vomit. With the exception of the observations on fruit, all feelings associated with plant smells were positive.

Fallen Leaves, Fresh Autumn Air

While participants did not specifically document emotions associated with the smell of Fallen Leaves, Fresh Autumn Air, Creek, or the overall smell of Nature, the memories conjured by these smells give a sense of nostalgia. Of the 23 memories associated with nature, 12 described childhood memories, home, and family members. The smell of roses and fresh cut grass reminded three participants of their own mothers, specifically in their gardens at home. Two other participants described their grandparents' homes.

Participants also described childhood activites such as "playing outside", "playing tag", "playing on playgrounds", "being in an open field", "fishing", "camping", and "summer camp." The smell of Fallen Leaves or Fresh Autumn Air reminded two participants of playing and crunching through leaf piles with siblings and parents. These two smells reflect the seasonality of the study period and constitute 22% of the smell data set when combined. Seven participants reminisced on the autumn season, and two participants associating the smell with holidays - Halloween and Christmas. One of those participants added "warm tea at home" as a specific memory. Another participant elaborated on how the "crisp, autumn air seems to smell different and makes you breathe deeper," suggesting it had a relaxing effect on them. Most participants described memories of personal places or places from their past, but three participants described memories specific to the study area. They were reminded of classes that were taught outdoors and of taking walks on campus. Compared to the memories of personal places, these descriptions were less detailed or vivid.









Figure 38: Nature smells activated mostly pleasant smells and memories (Chen 2023).

Machinery

Gasoline & Exhaust

Participants documented the smell of gasoline or exhaust four times, which consitutes 10% of the smell data set. As shown in Figure 39, no emotions were recorded in response to these smells, but one participant noted that they were reminded of both good and bad memories. Good memories included those with family members that worked on cars and bad memories were associated with heavy traffic.

Material Surfaces

Rubber Turf & Hot Pavement

One participant observed the smell of rubber turf and another participant documented the smell of hot pavement. However, neither recorded emotions or memories with either smell.





written responses

Figure 39: Smells from machinery or material surfaces were observed, but did not elicit many emotional reactions from participants (Chen 2023).

Memories from participants

Summary

Human Activity 1

Participants observed various smells associated with human activity (20%), but as shown in Figure 40, only a few emotional reactions were documented. Participants reported feeling "annoyed" and "disgusted" - both of which are unpleasant-activated feelings on the circumplex model.

2 Nature

Nature smells constitute over two-thirds (65%) of the documented smells in this study. These observations include smells of specific Plants as well as seasonal conditions such as the Fallen Leaves or the Fresh Autumn Air. With the exception of reactions to the smell of fruit, participants described plant smells and associated feelings as pleasant, using words such as "lovely, sweet, amazing, wonderful, and happy." One participant felt "calm" when inhaling the fresh autumn air. Most participants also shared fond memories from childhood and described their homes, family members, playing, outdoor activities, and holidays.

3 Machinery

A handful of participants documented the smell of gasoline or exhaust (10%), but only one participant indicated an emotional reaction. This participant felt ambivalent, given that the smell brought back both "good and bad memories." Good memories included those with family members that worked on cars and bad memories were associated with heavy traffic.

4 **Material Surfaces**

Participants observed the smell of rubber turf and hot pavement (4%), but did not provide further comments.





Figure 40: Plotting participants' emotional reactions on the dimensional emotion model shows how nature smells activated mostly pleasant emotions and smells from Human Activity activated unpleasant emotions. The text size of the words incrementally increase with relation to how frequently they appear in the data, resulting in word cloud diagram (Chen 2023).

The Haptic Sense of Place

Unlike sound and smell, our sense of touch can be directly felt through various parts of our exterior body. As the largest human organ and with numerous sensory receptors on its surface, the skin is highly sensitive and reacts to the temperature, humidity, and the flow of air around us (Rodaway 1994, 43). As our hands graze over a surface or an object, they feel its texture, materiality, geometry, weight, and density - confirming attributes we might first encounter visually. Pallasmaa emphasizes how our vision and other senses "are extensions of the tactile sense," and follow anthropologist Ashley Montagu in calling it "the mother of the senses" (Pallasmaa 2005, 10-11). Touch is intimate and reassuring, and therefore we trust it because it helps us understand the world.

Walking adds more complexity to our sense of touch. Our feet are in continuous contact with the ground plane as our muscles lengthen and contract. The awareness of the movement of body parts and the whole body through the environment is defined as kinesthesia. The perception of movement, specifically in the muscles and joints is defined as proprioception (Rodaway 1994, 42). These specialized senses will be addressed in more depth in the next section. In this study, the term "touch" or "haptic" are used to include both the tactile receptivity of the skin and the sense of kinesthesis.

Background

While scholars from various disciplines have written extensively about the role of our sense of touch in our experience of place, few research studies have investigated this topic in depth. Geographer Paul Rodaway concludes that "the ambiguity of sense definition lies in part in attempts to describe kinds of experience not adequately assigned to existing sense categories" (Rodaway 1994, 50). He proposes four categories for the sense of touch – global, reach, extended, and imagined.

Global touch refers to the body's general, typically passive, contact with its immediate environment, such as the temperature, humidity, and flow of air. Reachtouch, also referred to as cutaneous touch, is active, intentional, and exploratory, and includes what we touch with our fingers, hands, arms, and feet. Extended touch refers to the sense of touch mediated by or enhanced with technology. Examples include canes, shoes, or gloves. Imagined touch occurs when our imagination allows us to experience a haptic experience rooted in memory or expectation, such as when we are reading or dreaming (Rodaway 1994, 49-54). This section of this study primarily addresses global and reach-touch.

Because touch is only one component of this multisensory study, the classification system for the collected data follows the categories established by the previous sections. These relevant categories for this section includes Nature and Material Surfaces.

Relevant Terms

Cutaneous - relating to or affecting the skin (Rodaway 1994, 49).

Haptic - the tactile receptivity of the skin and the movement of the body parts and the locomotion of the whole body through the environment; includes the sense of kinesthesis (Rodaway 1994, 42).

Kinesthesia - awareness of the movement of body parts and the whole body through the environment (Rodaway 1994, 42).

Proprioception - perception of movement, specifically in the muscles and joints (Rodaway 1994, 42).

Haptic Sense Study Overview

Participants' sense of touch observations constitute 14% of the entire data set, as shown in Figure 41. Of the 52 observations on sense of touch, 80% of the observations fall under the Nature category and 17% fall under Material Surfaces. Subcategories with the highest frequency of occurrences include Wind (15%), Breeze (15%), and Sun/Warmth (15%).



Nature

Wind & Breeze

Known for its flat topography and windy weather, Kansas has an annual average wind speed of 17 mph. During the 25 days of this study, the maximum wind speed reached 30 mph, but the average wind speed remained at 7 mph (WeatherUnderground 2023). As shown in Figure 42, participants documented the feeling of wind blowing on them a total of 16 times (30%). Half of these observations (15%) was recorded as "wind" or "strong wind," while the other half (15%) was documented as a "breeze" or "calmer wind."

Participants vividly described wind or strong wind as "tunneling, basically everywhere, cold, going through my jacket, and on my face." The participants that described the wind's direct contact with their bodies reacted more strongly to the sensation. Wind that blew through their jacket was "refreshing," and the wind felt on their face was a "soothing experience that released stress." However, other participants described wind as "cold" and "abrasive." In contrast, participants that documented wind as a "breeze" described it as "light, or cool" and as "lovely, soothing, pleasant, and refreshing." As one participant acknowledged, wind can feel "at some points peaceful, at some points aggressive."

Temperature

This study was conducted during the autumn season, when temperatures can fluctuate drastically. During the 25 days of the study, the temperature rose to a high of 89° F and dropped to a low of 19° F. The average temperature during this period was 54° F.

Only two participants documented feeling hot during their walks (4%), and one of these participants added that they felt "uncomfortable." While eight participants recorded feeling the warmth of the sun (15%), only one participant noted that it felt "really nice." Four participants observed feeling the coolness of shade (8%), and one participant described it as "soothing." Four different participants noticed feeling cold or chilly (8%), but did not comment on the experience.

Water

Only one participant chose to feel the cool water from a water feature (2%) and noted that the sensation was "enjoyable and refreshing."



Plants: Bark, Foliage, Acorns

Four participants touched tree bark (8%) and described the textures as "smooth, bumpy, coarse, sharply rough, and hard." Four participants documented touching other plant materials such as foliage and acorns (8%). Two of these participants touched bald cypress foliage, describing the texture as "rubbery, nature-y," and "lovely, but not as soft as I was hoping." Besides the slight disappointment of this participant, no other emotions were expressed in relation to the touch of plant textures.

Figure 42: The majority of sense of touch observations were associated with weather conditions and nature (Chen 2023).

Material Surfaces

Metal, Stone, Wood

Six participants reported that they touched metal (11%) on site furnishings or sculptural elements that they encountered on their walk. As shown in Figure 43, two participants chose to touch stone (4%), and one participant touched a wood bench (2%). Metal was described as "smooth, warm, cold, and metallic," while stone was described as "rough and sharp."

While no apparent emotions were specified in the written responses, one participant indicated that the "cold bench surface" felt uncomfortable, but added that it was "not too bad because it was nice out." Another participant noted that they felt more "grounded" when they touched a metal plaque. Similarly, another participant wrote that touching limestone "brings me out of my head and into the physical world." These last two observations demonstrate how the sense of touch literally connects us to our surroundings. Geographer Paul Rodaway describes this relationship as "a kind of communication between person and world, a corporeal situation rather than a cognitive positioning...it establishes an active relationship to the world, transforming abstract spaces into meaningful places" (Rodaway 1994, 44).



Figure 43: Participants felt he surfaces of dfferent building materials, but did not document

Summary

1 Nature

As shown in Figure 44, of all the observations related to the sense of touch, participants reacted most strongly to **Wind and Breeze** (30%). When specified as a breeze (15%), wind felt "pleasant, lovely, soothing, and refreshing" to participants. When described as just "wind" or "strong wind," participants felt similar pleasant emotions as well as unpleasant agitation, describing the wind as "aggressive" or "abrasive."

Temperature played a more minor role in the participants' experiences. They observed feeling "hot and uncomfortable," cool in the "soothing" shade, and "really nice" in the warm sun. The touch of **Water** was described as "refreshing and enjoyable." While participants documented touching plant material such as bark, foliage, and acorns, no significant emotional reactions were recorded.

2 Material Surfaces

Although participants documented touching **Metal, Stone,** and **Wood** during their walks, they did not record obvious emotional reactions. One participant expressed discomfort while sitting on a metal bench, while another participant noted that they felt more "grounded" after touching a metal plaque. Similarly, another participant wrote that touching limestone "brings me out of my head and into the physical world." These last two observations demonstrate how the sense of touch literally connects us to our surroundings.



Figure 44: Plotting participants' emotional reactions on the dimensional emotion model shows how elements from **Nature** evoked both pleasant and unpleasant emotions. The text size of the words incrementally increase with relation to how frequently they appear in the data, resulting in word cloud diagram (Chen 2023).

The Ground Textures of Place

When we walk through a landscape, our bodies form a unique relationship between our feet and the ground. We often walk across various types of surfaces, including pavement, gravel, and grass, and feel them through our soles and the bottom of our shoes. This sensation is described as "ground-feel" (Brown 2017). Different materials not only feel differently, but also sound differently as we walk across them. Thus, we act as a sound source of our own soundscape (Aletta et al. 2016). This section investigates how the combined haptic and sound experience of walking influences our sense of place.

Background

Studies that focus on the **ground-feel** of pedestrian experiences are often related to assessments of walkability and connectivity. They typically describe rough, textured ground as a barrier to bodily movement, and prioritize smooth, paved paths to facilitate universal access. While these considerations are valid, there is an overall lack of research on how ground surface textures *feel* on the human body. An ethnographic study on pedestrians and mountain bikers in Scotland showed that recreational walkers avoided monotony, seeking out routes with varied terrain to challenge their physical abilities (Brown 2017). These experiences evoked feelings of empowerment as well as playfulness. Participants tested out their skills, explored their surroundings, and discovered unexpected surprises. Through direct, bodily contact, the participants felt more immersed and connected to their surroundings. The study suggests that the "smoothing off of experience reduces the effort, movement, and agency" of individuals, leaving the body disconnected from its surrounding environment (Brown 2017, 310-12).

Studies on pedestrian perception of *self-produced walking sounds* are also rare. One study tested participants' sound preference on four diffrent path materials grass, wood, stone, and gravel (Aletta *et al.* 2016). Overall, participants preferred grass and evaluated gravel as their lowest preference. The study suggests that gravel can be considered loud and intrusive, especially compared to background noise Furthermore, participants reported gravel to be "tiring or arduous to walk on," indicating that haptic comfort influenced their sound perception and preference (Aletta *et al.* 2016, 172). These results differ from the previously mentioned haptic study on recreational walkers, which unlike this sound study, was conducted in situ. The sound study used simulation technology and an anechoic chamber to control environmental conditions. The authors, however, recognize that "it is not expected that a sample of participants would assess the investigated variables exactly as they would in a real site" (Aletta *et al.* 2016, 172). This statement underscores the need for more sensory studies conducted in realworld contexts to better understand pedestrian experiences with ground textures.

Relevant Terms

Anechoic chamber - a room designed to stop sound waves (Aletta et al. 2016).

Haptic - the tactile receptivity of the skin and the movement of the body parts and the locomotion of the whole body through the environment; includes the sense of kinesthesis (Rodaway 1994, 42).

Ground-feel - the bodily sensation of walking on textured ground (Brown 2017).

Ground Texture Study Overview

As shown in Figure 45, participants' observations of ground-feel and/or walking sounds constitute 7% of the entire data set. Of the total 23 observations, 14 of them (62%) refer to **Nature,** specifically **Fallen Leaves**. The remaining 9 observations (38%) document different types of paving and engineered surfaces such as **Concrete** (9%) and **Gravel** (9%), **Brick** (4%), **Rubber Turf** (4%), and **Grass** (4%).



Figure 45: Participants documented both the sound and haptic or bodily feeling of walking on different ground textures, such as fallen leaves and paving materials (Chen 2023).

Nature

Fallen Leaves

Participants observed the "crunch, crackle, or crinkle" of fallen leaves a total of 14 times (62%) during their walks. As shown in Figure 46, they reported feeling "happy, relaxed, satisfied" and expressed a love for the sound, smell, and sensation of the experience. One participant described how "the ground changes and becomes softer," which can be felt "through the soles of [their] shoes." Another participant was reminded of their childhood, autumn memories.

Compared to other categories and themes in this study, these responses demonstrate strong feelings. For the first time, "satisfied" appears as an observed feeling for two participants. One of these participants added, "There's nothing better than a good leaf crunch." Furthermore, two participants use "love" instead of "like" to express a higher level of pleasure in their experiences.

These results align with Brown's (2017) ethnographic study on recreational walkers, who enjoyed the challenge and playfulness of crossing varied terrain. The participant responses suggest that in certain contexts, rough, textured ground surfaces can promote energetic movement that stimulates not only the body, but also the mind through positive feelings and emotions.



Key written responses

Figure 46: The sound and feeling of crunching through fallen leaves evoked pleasant emotions and memories for participants (Chen 2023).

Memories from participants

Material Surfaces

Paving: Concrete, Gravel, Brick

Two participants documented the feeling of walking on concrete while two other participants documented the "crunch" of walking on a gravel path. One participant observed walking over brick and another documented walking over a metal plate. In total, these observations on different types of paving constitute 30% of this data set, as shown in Figure 47. Participants did not comment on emotional responses or preferences, which inhibits data comparison to the walking sound study by Aletta *et al.* (2016). Only one participant noted that they felt "unstable" walking on brick, which reinforces the point that smooth paving may be necessary or more appropriate in certain contexts.

Lawn & Synthetic Turf

During their walks, one participant described walking on lawn on the campus quad while another participant described walking on rubber turf at the old sports stadium. The participant walking on lawn commented that the sensation was "cool, refreshing, and nice to be off of hardscape." The participant walking on the synthetic turf felt "excitement and anticipation." Whether walking on real or synthetic grass, both participants reported positive emotions.



Figure 47: Participants documented a variety of material ground surfaces along their walks

Summary

1 Nature

Participants observed the combined feeling and/or sound of walking and "crunching" through **Fallen Leaves** a total of 14 times (62%). As shown in Figure 48, they reported positive emotions such as feeling "happy, relaxed, satisfied," and used strong words such as "love" instead of "like." These results align with Brown's (2017) ethnographic study on recreational walkers, who enjoyed the challenge and playfulness of crossing varied terrain. The participant responses suggest that in certain contexts, rough, textured ground surfaces can promote energetic movement that stimulates not only the body, but also the mind through positive feelings and emotions.

2 Material Surfaces

Participants that documented walking over paving such as concrete, gravel, brick, and wood did not report significant emotional reactions. The two participants that walked across **Lawn** and **Synthetic Turf**, however, described pleasant, active emotions, such as "nice, refreshed, excited, and anticipation." These results show that participants may enjoy walking across grass over paving materials, which was concluded by Aletta *et al.* (2016). However, this study does not provide enough data to support this conclusion, and can only suggest that ground materials and textures influence pedestrian experiences of a place.



Figure 48: Plotting participants' emotional reactions on the dimensional emotion model shows how the multimodal sensory perception experience evoked mostly pleasant feelings. The text size of the words incrementally increase with relation to how frequently they appear in the data, resulting in word cloud diagram (Chen 2023).

Mapping Sense of Place

The psychogeography maps created by the Situationists were not intended to represent the totality of the city, but rather to convey the pedestrian's experience. The fragmented pieces of the city map delineated "zones of distinct psychic atmospheres" and the swooping red arrows represented the push or pull of the path, which Debord described as "the appealing or repelling character of places" (Debord 1955). In his essay, "The Agency of Mapping: Speculation, Critique and Invention," landscape architect James Corner echoes this desire to explore cartography as a way to reveal lived realities and not merely the quantitative and so-called "objective" analysis of existing conditions. Corner believes that mapping has the power to reveal hidden relationships and interactions of place to "show the world in new ways" (Corner 1999, 217).

Synthesizing the Data

The field of psychology has developed various emotion models that are used in research or practice (Thomson and Crocker 2013). This study adapted a dimensional version, specifically Russell's 1980 circumplex model. The x-axis on the model signifies a spectrum from unpleasant to pleasant, while the y-axis represents levels of activation. This structure forms relationships between opposite emotions across different quadrants (Yarwood 2022).

To collectively analyze the emotions evoked by sensory experiences, the emotional descriptors from the previous sections on sight, sound, smell, touch, and ground textures were combined and plotted onto the emotion model. In the composite diagram in Figure 49, the text incrementally increases in size with relation to how frequently the descriptor appeared in the data set, resulting in a word cloud diagram.

In comparing the data between the compiled sensory observations and the emotional responses, the findings show that only 30% of the sensory observations evoked emotional responses. The mappings of the data, however, tells another story. Not only do the maps provide the locations and context of where the observations occurred, they illuminate two important findings.

- First, the maps show emotional reactions in the collected data that were not linked to sensory observations. This finding suggests that participants may have recognized an emotional reaction, but not the cause, or that the emotion was a result of a combination of sensory or non-sensory factors. These emotions are not represented in the data analysis thus far, but are included in the mappings because they reflect and help illustrate "sense of place."
- Second, the number of documented sensory observations far surpasses the number of documented emotional reactions. In light of the previous finding, this result prompts another consideration — that participants may have observed a sensory experience, but not its emotional effect on them. These findings reflect the nature of human perception in our everyday lives.





Figure 49: The composite emotion model (above) shows how specific senses evoked specific feelings. Only 30% of the documented sensory observations were linked to emotional responses (Chen 2023).

Sensory-Emotion Descriptors



Mapping Emotions

Before mapping all the emotions from the collected data, the emotional descriptors were categorized into six groups, based on their placement on the emotion model. The categories, shown below in Figure 50, reflect the two dimensions of the model — the unpleasant/pleasant spectrum and its activation level. Words that fell along the center of the y-axis were grouped into two levels of "mixed emotions," if they could be interpreted as either pleasant or unpleasant. These six categories provide an organizational system to help understand the mappings and identify clusters within the study area. As previously stated and shown on the map in Figure 51, emotions without identified causes (unbolded text and labels) provide a more complete representation of "sense of place."



Figure 50: Six emotion categories for descriptors linked to sensory observations (Chen 2023).



Figure 51: Map of all mapped emotions by participants. Bolded labels are emotions linked to sensory observations and unbolded labels represent emotions without identified causes (Chen 2023).

Places Defined by Emotion Clusters

As shown in the map in Figure 53, emotion clusters emerge from the mapped data. Pleasant emotions cluster around the main quad, the marching band's practice stadium, along Campus Creek, and in small, more intimate gardens or pathways. Unpleasant emotions consistently align with main corridors, streetscapes, and next to buildings and infrastructure, such as the parking garage or campus power plant.

1 - Main Quad



2 - MLK Corridor & Power Plant



3 - Rain Garden



4 - Memorial Stadium



5 - Campus Creek



6 - Lover's Lane



7 - Pedestrian Walking Path



8 - The Meadow



Figure 52: Places in the study area where participants mapped emotional responses (Photos by Chen 2023).



Figure 53: Distinct types of emotions clustered around specific places (Chen 2023).

1 - Main Quad



Figure 54: The main quad offers a traditional campus setting (Chen 2023, Photo by J. Corbett).

As shown on the key map in Figure 54, the main quad is centrally located on the university campus. Surrounded by the university's historic limestone buildings, the quad offers a traditional campus setting of lawns, trees, and long, diagonal pathways that cut across the open space. Participants documented sensory experiences related to nature, such as the sound of wind blowing on trees and leaves, insects, and squirrels/ Participants commented on the feeling of wind, shade, or walking on grass as "refreshing" or "nice." As seen in the maps in Figure 55, these observations occurred more frequently upon entering the quad from the southwest corner and towards the more central area of the quad. More passive emotional descriptors, such as "calm, soothing, solitude, secluded, and melancholy" occurred on the perimeter of the quad or in spaces that are more enclosed. Drawing 7 depicts an example of an intimate seating area on the northeast corner of the quad. Drawings of the quad focus on participants' new discoveries or the aesthetic qualities of specific trees.

Compared to the participants that explored other zones, the six participants that explored the quad responded with the most variance to the pre- and post-walk questionnaire. The participants began their walks with varying levels of familiarity. After their walk, two participants felt more familiar with the area, three participants felt indifferently, and one did not feel any difference. Four participants reported that they would want to take a future walk, while two would consider the idea. Compared to before their walk, four participants felt more relaxed, one participant felt more energized, and one participant felt both more relaxed and energized.

Drawings





It is a place **I've never** really noticed, and it looks like a nice place to come.

Drew where someone attached tiny doors to the gnarled roots of a burr oak. **Had never noticed it before** - just off of sidewalk by Hale.

Sensory Observations



Emotions



Figure 55: Active, pleasant feelings occurred more frequently towards the center of the quad, while more passive descriptors occurred on the perimeter or in more enclosed spaces (Chen 2023).



Sycamore tree - beautiful white bark in sun. Limestone building.



This is my **favorite tree** on the quad, the shumard oak so that is why I drew it. It has **stunning** fall color and immaculate form.


2 - Martin Luther King Corridor & Power Plant



Figure 56: The campus power plant towers over pedestrian walkway (Photo by Chen 2023).

Martin Luther King Corrridor begins as a vehicular street on the south edge of the campus, but transitions into a primarily pedestrian pathway. The plan enlargements, marked on the key map in Figure 56 and shown in Figure 57, show the pedestrian portion of the corridor. Despite the lower amount of vehicular traffic, the heavy foot traffic along this corridor, combined with the distinct industrial sounds from the power plant, trigger various unpleasant-active feelings. As mentioned in Drawing 4, these conditions induce emotions such as feeling "unsafe, uncomfortable, distracted, and stressed." Yet, as shown in the emotion map, only half of the unpleasant feelings (in red hues) were associated with a sensory observation (bolded labels). The other half of unpleasant emotions, which include feeling "entangled, vulnerable, exposed, cautious, small, or rushed," were not attributed to a specific cause (unbolded labels). While we cannot assume the causes of these emotions, they cluster around intersections of major pathways and around the power plant.

In contrast, pleasant emotions of feeling "refreshed, nice, or pleased" occurred at the very north end of the corridor, where the main path splits off into various paths or into a small, walled courtyard with plantings and a water feature. While trees and planting appear in the participants' drawings, they do not emerge as strong elements in the sensory data. This finding is interesting because this portion of the corridor is lined with trees, rain garden beds, and educational signage. Despite these design elements in the landscape, the participants' emotions still reflected the unpleasant sounds and experiences of the environment.

Sensory Observations



Emotions



Figure 57: Participants documented mostly unpleasant-active emotions along the corridor and by the power plant (Chen 2023).



The space that connects along the whole of campus but also makes me feel unsafe from people and

vehicles.

SERVATIONS

UNPLEASANT

Unpleasant-Active

Unpleasant-Passive



A section of bike racks. I chose this because of all the each day and watch as it spots available only 3 are taken. Reminds me how little people choose to bike.



It's one I enjoy to look at changes throughout.

PI FASANT



lost small lonely

PASSIVE

Pleasant-Active

Pleasant-Passiv

.

Mixed-Active

Mixed-Passive

Small, Intimate Gardens

3 - Rain Garden



Figure 58: Small, intimate gardens allow people to find refuge and connect with nature (Photos by Chen 2023).

Like the small courtyard at the north end of the Martin Luther King Corridor, other small-scale gardens on the campus provide opportunities for people to find respite and connect with nature. The map in Figure 58 outlines a long, narrow rain garden ton the west edge of the study area. A high retaining wall runs along the garden edge and sloping topography, separating the busy street from the garden to provide, as two participants observed, a "quiet" place. Yet, the silence feels "inhuman" to one participant and the concrete benches "are uncomfortable." Designed as an engineered rain garden, concrete surrounds the entire garden, forming orthogonal edges and spaces, as shown in Drawings 1 and 2 of Figure 59.

"The Meadow" is a demonstration prairie garden, converted from an open lawn that is surrounded by the university's art museum, auditorium, and chapel. This garden is more rustic, with wood benches and decomposed granite pathways that meander through low and tall plantings. Participants observed the smell of prairie plants and the sounds of birds and insects, which made them feel "curious, calm, and secluded." In their trip diaries, participants reflected upon the garden's history, wondering what the site was like before the meadow was planted, and also wondered about the type of birds that they heard chirping. Compared to the quiet and more austere environment of the rain garden, the Meadow invited more interactions and fostered a deeper relationship between participants and their surroundings.

3 - Rain Garden





A place to **si**t and [it was] quiet.



8 - The Meadow





The tree in the center of the meadow had very striking foliage color just at the top of the canopy, it was **unique**.



Figure 59: Contrasting sensory observations and emotional reactions between the rain garden and "The Meadow" were documented by participants (Chen 2023).

[l] was sitting on a bench and it was quiet and calming, unlike some of the other sites.



4 - Memorial Stadium



Figure 60: Green roofs flank the the open stadium, where the marching band practices (Photo by Chen 2023).

As shown in Figure 60, Memorial Stadium is located at the southwest corner of the campus. Like the Meadow demonstration garden, the former bleachers at Memorial Stadium have been converted into green roofs that support a prairie and educational learning at the university. The running track and field are regularly used as a practice stadium by student althetic groups and the university's marching band. These unique aspects of the stadium are reflected in the data. As described in the diagrams of Figure 61, participants heard insects, crickets, and birds, as well as music from the marching band. The stadium environment activated pleasant emotions of excitement and feeling entertained, as well as calming feelings that encouraged relaxation, reflection, and nostalgia. Drawing 34 points out how the top of the stadium is a great place to watch sunsets.

In contrast to the experiences in the stadium, participants experienced unpleasant feelings along the stadium's perimeter. Despite the visual appeal of the landscape, shown in Drawings 30, 31, and 32, other sensory observations along the roadside included "disgusting" smells such as the sewer or what one participant could only describe as "stinky." Near the parking garage, participants felt "alert" and "anxious." No pleasant feelings were documented along the streets in this area. However, all six participants that explored this zone reported high levels of familiarity with the area before the walk and feeling even more familiar with the area after the walk. Five of the six participants would want to take future walks, while one participant would consider it. Three participants felt more relaxed after the walk, while three participants felt more energized.

Drawings



grass.

There was a table to sit at to draw.

I liked the location and the **view** of the Union and

Sensory Observations



Emotions



Figure 61: Pleasant feelings were mapped within the stadium, while unpleasant feelings were mapped on its outer streetscape edge (Chen 2023).



I enjoyed the contrasting of the **curves** and the simplicity of the space.



There was a chair nearby.



Top of memorial stadiun - would be a great place to watch **sunset**; most memorable part of walk.



5 - Campus Creek



Figure 62: Campus Creek is one of the most wooded areas on the university campus (Photo by Chen 2023).

As shown in Figure 62, Campus Creek runs through the northeast portion of the study area. This area is surrounded with taller and denser canopy coverage, as illustrated in Drawing 17 in Figure 63. The participants' sensory observations also reflect these conditions, which include nature elements such as the sound of wind or wildlife. These sounds, combined with the quiet setting and minimal traffic noise helped participants feel "peaceful and calm." One participant felt "happy," crunching through fallen leaves. Less pleasant emotions included feeling hungry, induced by the smell of fruit, and feeling "alert" in response to the sound of crows.

Compared to participants assigned to other zones, the participants of this area overall began their walk with a lower level of familiarity. All participants felt more familiar after their walk and five of the seven participants would want to take future walks, while two would consider the idea. One participant reported feeling cold after their walk, but the six other participants all felt more relaxed after exploring this area. This finding confirms the pattern seen in the previously analyzed data — that nature elements in the landscape improved restorative emotions for participants.

Drawings



I saw two rows of trees forming cover overhead and loved watching the leaves float down from the wind.

Sensory Observations



Emotions





Walking Paths

6 - Lover's Lane



7 - Gravel Walking Path





Figure 64: Tall trees provide shade along the walking paths (Photos by Chen 2023).

Lover's Lane, outlined in map of Figure 64, is a tree-lined road that slopes down to the east. Hence, one participant commented feeling "annoyed" while walking up the hill. As shown in the maps and diagrams in Figure 65, wind blowing on trees and leaves was the most frequently heard sound along the road, which helped participants feel "calm, peaceful, relaxed, nice, pleased, and happy." Furhtermore, participants felt a sense of discovery, as described in Drawings 13 and 21. These participants sketched new places or objects in the landscape that they had never seen before.

In response to the sound or presence of vehicles, participants felt they had to be "alert" or "aware." Participants also felt unpleasant emotions of feeling "annoyed" or stressed" from the sounds of heavy foot traffic, utilities, or maintenance. In Drawing 23, the participant observes how planting encroaches onto the sidewalk along a vehicular road, making it difficult for large groups of pedestrians to navigate.

The character of Lover's Lane is very different from the MLK Corridor, which was previously shown and analyzed. While participants documented mostly unpleasant feelings along the MLK corridor, the distribution of pleasant and unpleasant emotions are more interspersed along Lover's Lane. From a visual analysis perspective, the wide walkway of MLK Corridor may seem like a more pedestrian friendly path, but the lack of designation between pedestrians and other motor or non-motorized vehicles may cause pedestrians to feel "entangled, rushed, vulnerable, or unsafe." as described previously. These feelings do not appear in the data collected along Lover's Lane.

Sensory Observations



Emotions





Drawings



It (the sculpture) was something that I had never seen before and felt odd.



I sketched the large trees and shaded area east of the business building because I have not been there before.



Sensory Clusters, But Few Emotions

As shown in the map in Figure 67, participants documented many sensory observations, but very few emotional reactions for some of major places on campus. The absence of emotional responses suggests that these places might not have left strong impressions on the participants. These places include a heavily trafficked plaza, a main corridor, and an open lawn, shown below in Figure 66.

1 - Bosco Plaza



Many pedestrians cross Bosco Plaza, situated outside the university's Student Union. While participants observed several sensory observations in the plaza, only three documented feeling "comfortable, calm, and satisfied" in response to the sound of people socializing, the sound of the water feature, and the sound and feeling of crunching through fallen leaves.

Mid-Campus Drive mirrors the pedestrian portion

of the MLK corridor. Although it is further away from

the power plant, the hum of utilities from buildings

are prominent, as indicated by the participants'

observations. However, the only emotions

2 - Mid Campus Drive



3 - Anderson Lawn



documented were feeling "safe" from the sound of people walking and talking, and "pleased" from the feeling of the breeze. Anderson Lawn sits in front of Anderson Hall, one of the oldest buildings on campus. This large expanse of lawn hosts large university events, but as shown

through the lack of collected data, did not evoke any

Trees Wind O Leaves Trees Leaves Roses Pine Power Plant Wind Quiet Grasses Concrete Wind Brick **O**Plants Wind Wind Trees calm Cars comfortable (\bigcirc \bigcirc satisfied Hot Sewer O Insects Stink Marching **Band** Generators Crickets Rubber Turf Brick Grass Cars Legend 1 observation unpleasant-active 2 observations \bigcirc unpleasant-passive

Traffic Leaves

) Water) Foliage Birds

Figure 66: Major places on campus that participants documented few or no emotional reactions (Chen 2023).

responses from participants.

Figure 67: The lack of emotional responses suggest that these three places might not have left strong impressions on the participants (Chen 2023).



Pleasant Emotions

When the participants' sensory observations and emotional reactions are synthesized for the entire study area, it becomes apparent that nearly all pleasant emotions were linked to nature. Shown in Figures 68 and 69, emotions that occurred more than three times were graphed, along with their sensory source. The most frequent emotions include "calm, relaxed, peaceful, nice, happy, and refreshed/energized." These findings align with the earlier results of the questionnaire, in which 94% of the participants responded feeling "relaxed" or "energized" after their walks. However, the questionnaire does not capture the variety of emotions nor provide details on what elements of the environment contribute to these experiences and feelings.







Figure 69: The sense of touch, including wind and selecting pleasant-active emotions (Chen 2023).

Figure 69: The sense of touch, including wind and sense of walking over fallen leaves contributed to participants

Mixed and Unpleasant Emotions

The questionnaire also did not capture variety of mixed and unpleasant emotions, shown in Figure 70 and 71. The causes of mixed feelings were either associated with visual cues, evoked by sounds of wildlife, or unidentified. The sensory aspects of sources that caused unpleasant feelings were also often not specified or related to the presence of traffic. Some unpleasant emotions were linked to the sound of machinery and smells that resulted from human activit. These findings suggest that recognizing the causes of mixed and unpleasant emotions might have been more challenging for participants, compared to recognizing the sensory sources for pleasant emotions.



Figure 70: Mixed feelings were evoked by wildlife sounds, visual cues, or unidentified causes (Chen 2023).

sources (Chen 2023).

Figure 71: Unpleasant emotions were associated with mechanical sounds, strong smells, or unspecified

Summary

As shown throughout this study's findings and mappings, elements of nature – such as wind, water, and trees – stimulated all the senses and evoked mostly pleasant emotions. Mechanical sounds, smells resulting from human activity, and variable weather conditions impacting the sense of touch triggered unpleasant emotions. These patterns become more visible in the mappings of the data. Pleasant emotions clustered in the main quad, practice stadium, along a creek, and in small, more intimate gardens or pathways. Unpleasant emotions consistently aligned with streets, main corridors, and next to buildings and infrastructure, such as the parking garage or power plant. Places with many sensory observations, but few or no emotional reactions, suggest that participants did not leave with strong impressions of these spaces, which include a main plaza, pedestrian corridor, and open lawn.

By comparing the sensory mappings to the emotion mappings of each cluster, further nuances become evident. For places that are physically well defined, such as the stadium or main quad, pleasant-active emotions occurred upon entering the space or in central locations. For the stadium, unpleasant-active emotions were documented on its outer edge, which is surrounded by streetscapes. For the main quad, pleasant or mixed emotions that are more passive occur on the perimeter or in spaces that are more intimate and enclosed. This observation can be seen throughout the study area in spaces such as at the walled courtyard, narrow rain garden, and more intimate meadow garden.

Furthermore, the maps identify emotional reactions in the collected data that were not linked to sensory observations. This finding suggests that participants may have recognized an emotional reaction, but not the cause, or they may have observed a sensory experience, but not its effect. Only 30% of the documented observations linked a sensory experience to an emotion. These findings prove to be a limitation for this study, as well as for other studies on human emotions. However, they reflect the nature of human perception in our everyday lives. While research studies face the challenge of collecting data and understanding the interworkings of our subconsciousness, mappings can help connect and illustrate human experiences that occur both internally and externally.



Figure 72: Places defined by participants' documented emotional reactions during their walks (Chen 2023).





Conclusions.... Limitations..... Future Researd Applications... Final Thoughts

Conclusions

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Conclusions

The findings of this study show how walking, drawing, and engaging all the human senses deepen our understanding and relationship to a place. The following paragraphs present the findings collectively, while detailed summaries can be found at the end of each section in the previous chapter.

Walking

- Walking Develops Familiarity with Place After taking their walk, 69% of the participants felt more familiar with the places they had walked through.
- Walking Can Encourage Future Exploration of Place When asked if they would want to take future walks in the same area they explored, 69% of the participants answered "yes."
- Walking Can Foster Postive Emotions Compared to before their walk, 94% of participants felt more relaxed, energized, or both after their walks.

Drawing

- Walking and Drawing Leads to New Discoveries Participants drew and described hidden places or interesting objects that they had never noticed before.
- Drawing Highlights Materials and Elements of the Surrounding Environment Through drawing, participants focused on the materiality, textures, and ephmeral gualities of trees, buildings, and other elements in the natural and built environment.
- **Drawing Encourages Observation of Social and Personal Relationships** Participants noticed patterns of how others use or don't use certain places and amenities, and identified specific elements that they were personally drawn to.
- Walking and Drawing Cultivates Personal Connections to Place Participants drew scenes that reminded them of their own identity, past memories, or elicited emotions. The majority of drawings and reflections were associated with pleasant emotions. Frequent indicators included words such as "like, love, interesting, striking, unique, and nice."

Hearing

- set and also generated the most and widest range of emotions.
- Sounds from Human Activity Establishes a Level of Comfort The sounds of pleased, reflective, and entertained."
- uncomfortable, stressed, distracted, and small."

Smelling

- Smells Associated with Human Activity Were Percieved As Unpleasant feeling included "disgusted" and "annoyed."
- amazing, wonderful, happy, and calm."
- Mechanical and Industrial Smells Did Not Prompt Emotional Reactions comment on the effect of these smells on their experience.

Soundscapes Play a Dominant Role in Walking Experiences - Of all the sensory experience documented by participants, sound constituted 50% of the entire data

people walking, talking, or playing music helped participants feel "safe, comfortable,

Nature Sounds Stimulate a Variety of Emotions - The sounds of the water or wind blowing on trees and leaves evoked restorative emotions, such as feeling "calm, relaxed, peaceful, happy, and nice." Unfamiliar or acutes sounds produced by birds and squirrels aroused more active responses of feeling "curious, alert, or startled."

Mechanical and Industrial Sounds Trigger Unpleasant Emotions - Sounds from traffic, maintenance, utilities, or a power plant caused participants to feel "annoyed,

Emotional reactions towards smells resulting from human activity were few, but

Nature Smells Stimulated Pleasant Emotions and Memories - The smells of plants, leaves, and fresh air evoked pleasant emotions and fond memories from childhood for most participants. Descriptive indicators included words such as "lovely, sweet,

Participants documented the smell of gasoline or exhaust from vehicles, but did not

Conclusions cont'd

Touching and Feeling

- Weather Conditions Influence Comfort Levels and Elicit Emotional Reactions Depending on weather conditions, wind, temperature, and water, were percieved as "refreshing and soothing" or "uncomfortable, aggresive, and abrasive."
- The Materiality of Site Furnishings Participants did not express obvious or strong emotional reactions when they touched the metal, stone, and wood on site furnishings and elements, but they noticed feeling more "grounded" and connected to their physical surroundings.

Walking on Ground

Walking is a Unique Multisensory Experience - Participants documented both the sound and bodily, haptic feeling of walking over different ground textures, such as lawn, synthetic turf, and crunching through fallen leaves. They reported pleasant emotions, using descriptors such as "love, satisfied, and relaxed." This finding serves as an example of sensory congruency — the concept that when we feel a match between multiple sensory modes, our brains process information more smoothly (Spence 2020).



Figure 73: Only 30% of the documented sensory observations were linked to emotional responses (Chen 2023).

Mapping & Graphic Communication

- Mapping Reveals Relationships Between Places and Human Experiences data to become more visible.
 - Pleasant Emotions Elements of nature such as wind, water, and pleasant emotions. These relationships occurred in the main quad, or pathways.
 - relationships consistently aligned with streetscapes, main corridors, power plant.
 - Mixed Emotions Mixed emotions can be pleasant, unpleasant, or spaces and were often not linked to specific causes.
- but reflects the nature of human experience in our everyday lives.

In conclusion, walking, drawing, and mapping sensory observations are invaluable methods of site research that engage both the mind and body. Design professionals have unique graphic and analytical skills to synthesize both qualitative and quantitative data. By better understanding how sensory experiences and human emotions are intertwined in specific contexts, landscape architects and planners can strive to design places that enrich the human experience.

Mapping the sensory observations and emotional reactions allowed patterns in the

trees - stimulated all the senses that were studied and evoked mostly practice stadium, along the creek, and in small, more intimate gardens

Unpleasant Emotions - Mechanical and industrial sounds and smells resulting from human activity triggered unpleasant emotions. These and next to buildings and infrastructure, such as the parking garage or

neutral and include feelings such as "secluded, nostalgic, curious, and interested." These emotions often occurred in more enclosed, intimate

Mapping Uncovers New Information - In light of the previous finding, which suggests that participants may have recognized an emotional reaction, but not the cause, another consideration arises in data analysis — that participants may have observed a sensory experience, but not its effect. Only 30% of the documented sensory observations were linked to an emotion. This consideration is a limitation for this study, as well as other research regarding human perception and emotions,

Limitations

The limitations of this study relate to the challenges and variability of qualitative research involving human perception and landscapes, which are open systems. Limitations include the following:

- Selected Study Area A university campus is a relatively controlled environment compared to the many types of designed landscapes. Therefore, the findings of this study do not translate to other settings unless they share similarities in their context. For example, a park with various walking paths, a mix of programmed and unprogrammed open spaces, large expanses of lawn, tree canopy, and surrounding structures might be comparable to this study area. Regional geographic characteristics and climate should also be considered.
- Seasonal Timing of Study The collected data only represents experiences within the study area during the autumn season, which yields specific conditions and observations that appear in the data, such as fallen leaves. While the mostly sunny and dry weather during the four-week timeframe encouraged students to volunteer to participate and take walks on the campus, the limited range of conditions related to precipitation and moisture in the environment is reflected in the data.
- Participant Population Participants were university students and therefore the collected data represents perceptions of mostly young adults within the age 18 to 25 years old. Sensitivity to sensory perception, capacity to locate oneself precisely on a map, and communicative skills through written responses could vary between populations of different ages or backgrounds. All participants were design students with previous drawing experience, which is not typical of the general public. Many participants were likely landscape architecture students, which may have resulted in data that resulted from an inherent bias or focus on landscape and elements in nature.

Future Research

Limitations of this study serve as launching points for future walking and multisensory studies. The following topics can be further explored:

- be likely detected.
- sense of touch.
- due to varying mobility capacities and perceptual sensitivities.
- Other Human Senses In the appropriate context, such as in a dense, the vestibular sense (balance).
- Distinctions Within One Sense Physical conditions and proximity to the participant (sight, smell, touch, ground).
- between design disciplines and cognitive neuroscience. The combined smoothly — is another future topic to be explored.

Different Contexts and Landscape Conditions – The methods of this study can be applied to places of varying scales and environments. For example, in an urban context, more sounds and smells produced by human activity will

Seasonality – Conducting this study during different seasons will impact the results, particularly for experiences related to weather conditions and the

Participant Population – Engaging a participant population of a different age or demographic can alter the findings of walking and multisensory research

commercial area, studies can consider including the sense of taste. Future studies can also incorporate other variations of the humans senses, such as proprioception (perception of movement through the muscles and joints) or

sensory sources can influence perception and outcomes. This study did not distinguish between observations that were experienced at the foreground or background (sight, sound, smell) nor between sensory experiences that were imposed (sound, touch) and those that were intentional and initiated by

Multimodal Perception and Sensory Congruency – The findings from this study opens the opportunity to bridge research on environmental perception sound and haptic experience of walking over textured ground is an example of multimodal perception. Sensory congruency — when combined sensory stimuli match each other and allow the brain to process information more

Applications

Designers address places at both large and small scales, with a wide range of conditions Historically, sensory design in landscape architecture and urban planning has been applied either to healing gardens (Spence 2020) or to design solutions that focus on buffering unwanted sounds or smells (Wissmann 2014; Xiao et al 2021). However, consideration for the human senses is applicable to all types of projects because our senses are always active and anchor us to a place. Understanding human emotions in relation to sensory perception can inform how we design and choreograph the overall experience of walking through designed landscapes.

Site Research & Design

The mapping of physical, sensory, and emotional experiences can become more integrated into site analysis and design considerations. These observations can lead to new discoveries related to the challenges and opportunities that a place offers. Landscape architects and planners tend to shy away from documenting these qualitative aspects of place due to conventional practices that prioritize analyzing site conditions through an objective lens. As landscape architect James Corner points out, the profession assumes that if our maps are "quantitative, objective and rational, it is also true and neutral, thereby helping to legitimize and enact future plans and decisions" (Corner 1999, 215). This mentality, however, misses an important component of design – the human experience. For designers to abandon or suppress their human intuition is a waste of their talent and capabilities. Designers are uniquely positioned at the intersection of art and science, and have the skills to gather, synthesize, interpret, and graphically communicate both qualitative and quantitative information.

Community Engagement

The methods of this study are adaptable for various contexts and applications, particularly for community engagement activities and participatory design. This study intentionally uses analog methods that do not rely on advanced technology, so that groups with limited resources can implement the same or similar strategies. The nature of the research activities – walking, drawing, and documenting sensory experiences – is open-ended and inviting to people of all backgrounds. The methods are multimodal and focus not on a singular, but multiple human senses, which are collectively universal and the most direct way people interact with and relate to their environment. These engagement methods can prompt dialogues about places and turn community engagement into a process of community building. They can also serve as a preliminary study to identify and prioritize specific places within a larger project site.

Designers today are already using creative ways of engaging people through walking, mapping, and harnessing local knowledge to help inform design projects. However, gathered data is not always thoroughly analyzed, represented, or applied in a meaningful way. It is too easy for designers to simply extract quotes from participant responses or grab hold of statistical data to build a case around their design decisions.

This study demonstrates how complex, qualitative information can be gathered, analyzed, and represented in a way that allows the "data to speak for itself." Prominent themes and patterns emerged from this research study, but the maps and graphics still represented the entire data set, showing the wide range of the participants' responses and experiences. In participatory design, this approach is critical for the process to be truly inclusive – if a participant's input is not represented or weighted equally, their voice is essentially silenced. Thus, providing a transparent framework for data collection and analysis also provides accountability for those in positions of power or decision-making.

Design Education

Lastly, the ideas and methods from this study can be applied in the context from which it originated – within design education. With the rapid development of technological tools, students gravitate towards using digital methods of representation over the traditional methods of production, such as drawing by hand. Digital methods, however, diminishes the human experience of place and skips over the fundamental skills of direct observation. The research activities from this study can be incorporated into the coursework for different levels of curriculum. From foundational courses on drawing and site analysis to upper-level research and design studios, design faculty can extract or modify components from this study to satisfy their learning objectives. The overall intent of this research is to encourage both students and professionals to practice engaging with the places they design for through both their minds and their bodies.

Final Thoughts

When I first began my thesis, I imagined myself following in the tradition of Situationists, walking artists, and performance artists, such as Richard Long and Marina Abramović. I had a deep desire to immerse myself in walking, drawing, and experiencing places - all of which I did, but did not include in this study. In parallel with the participant study, I walked and filled out a trip diary for each of the zones in my study area. I also produced drawings, using various media, which can be found in Appendix E. However, once I had collected and started analyzing both the participants' and my own data (as separate studies), I decided to focus on the participant study. Not only did their trip diaries contain more interesting, emotional content, the findings from the participants' collective data were more telling and powerful than what I could offer from my own perspective - no matter how extensive or detailed my observations were. This realization was humbling and a reminder to me of what role designers play in both practice and research. While I strongly believe that we should value our intuition and perception in our work, more importantly, we must try to understand the experiences of others. By engaging with their stories and representing their perspectives, we can learn how to design better places that offer diverse and rich experiences. As we walk through a landscape, there can be moments when we feel happiness or relaxation, or moments when we feel tension or even sadness. Like a good story or song, designed landscapes can take people on an emotional journey. Crafting and choreographing that experience, yet leaving it open-ended to chance and to human interpretation, is both the challenge and the magic of what designers do.



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KANSAS STATE UNIVERSITY

- TO: Blake Belanger Landscape Archit & Comm Plan Manhattan, KS 66506
- FROM: Lisa Rubin, Chair Committee on Research Involving Human Subjects

DATE: 09/21/2022

RE: Experiences."

The Committee on Research Involving Human Subjects / Institutional Review Board (IRB) for Kansas State University has reviewed the proposal identified above and has determined that it is EXEMPT from further IRB review. This exemption applies only to the proposal - as written – and currently on file with the IRB. Any change potentially affecting human subjects must be approved by the IRB prior to implementation and may disqualify the proposal from exemption.

Based upon information provided to the IRB, this activity is exempt under the criteria set forth in the Federal Policy for the Protection of Human Subjects, 45 CFR §104(d), category:Exempt Category 2 Subsection ii.

Certain research is exempt from the requirements of HHS/OHRP regulations. A determination that research is exempt does not imply that investigators have no ethical responsibilities to subjects in such research; it means only that the regulatory requirements related to IRB review, informed consent, and assurance of compliance do not apply to the research.

Any unanticipated problems involving risk to subjects or to others must be reported immediately to the Chair of the Committee on Research Involving Human Subjects, the University Research Compliance Office, and if the subjects are KSU students, to the Director of the Student Health Center.

Electronically signed by Phill Vardiman on 09/22/2022 9:59 AM ET On Behalf of IRB Chair

Appendix B

Proposal Number: IRB-11306

Proposal Entitled, "Drifting Through Landscapes: A Study on Walking, Drawing, and Multi-Sensory

KANSAS STATE

UNIVERSITY.

View xForm - IRB Application for Approval

IRB Application for Approval

Data Entry

Administrative Information

Instructions

The KSU IRB is required by law to ensure that all research involving human subjects is adequately reviewed for specific information and is approved prior to inception of any proposed activity. Consequently, it is important that you answer all questions accurately. If you need help or have questions about how to complete this application, please call the Research Compliance Office at 532-3224, or e-mail us at comply@ksu.edu.

Form Creator

Charling Chen

Email: charling@k-state.edu

Title of Project/Course

Drifting Through Landscapes: A Study on Walking, Drawing, and Multi-Sensory Experiences

Principal Investigator

Principal investigator must be a K-State faculty member. If the PI's name does not appear, they will need to log into the system once to become a contact.

Blake Belanger

Email: belanger@k-state.edu

Degree/Title Associate Professor

Department Landscape Archit & Comm Plan

Campus/Cell Phone Number 785-323-7919

Select/Provide College Col of Architec, Plan & Design

Responsible Graduate Student (Person to contact for questions/problems with the form)

Charling Chen

Email: charling@k-state.edu

Contact Phone 314-814-3303

Project Classification

Thesis

Short form criteria

"existing data analysis only".)

None of the Above

Does this project involve any collaborators not part of the faculty/staff at KSU? (projects with non-KSU collaborators may require additional coordination and approvals):

No

Funding Source

N/A

Please provide a copy of the sponsor's grant application or contract as submitted to the funding agency, if applicable. No answer provided.

Based upon criteria found in 45 CFR 46 - and the overview of projects that may qualify for exemption explained at http://www.hhs.gov/ohrp/policy/checklists/decisioncharts.html, I believe that my project using human subjects should be determined by the IRB to be exempt from IRB review:

Yes

Requested Exempt Category

2 Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording).

(By clicking None of the Above, you will proceed to the full application. If you are doing data analysis plus another form of data collection, do not select

Non-Technical Synopsis

(*Please provide a brief narrative description of proposal. This should typically be less than 75 words and be easily understood by nonscientists*):

As professionals who strive to design walkable and meaningful places, landscape architects benefit from understanding how people move through and perceive their surroundings. This study proposes to examine pedestrian experiences and their sense of place through a multi-sensory lens. Based on the methods of psychogeography – an artistic practice and theory that emerged in Paris in the mid-nineteenth century – the researcher will undertake a series of walks to draw and record sensory observations throughout the Kansas State University campus and adjacent areas of Manhattan, Kansas. Research participants will consist of students from the College of Architecture, Planning, and Design, who will walk, draw, and map sensory observations within assigned zones of the campus grounds. Data will be synthesized and analyzed through the production of a series of maps and drawings. Possible findings include patterns between pedestrian perception and typologies of built form, which can offer insight and recommendations for future landscape architects and planners.

Background

(concise narrative review of the literature and basis for the study):

Psychogeography is an artistic practice and theory that investigates how people walk, perceive, and interact with their surroundings. Emerging from avant-garde movements in the mid-nineteenth century, psychogeography was developed by the Situationist International – a group of radical artists, poets, and intellectuals based in Paris. They used a method called the "dérive" or "drift" as an improvisational way of exploring the qualities of urban environments on foot. They focused on elements such as light, sound, ambience, human activity, and memories associated with place to produce reconfigured maps of the city that represented pedestrian experiences (Careri 2002, Bassett 2004, O'Rourke 2013).

While the research and practice of psychogeography has continued in psychology, geography, and performance or conceptual art, there has been considerably less scholarship of the subject in landscape architecture. In their investigations on walking and environmental perception, landscape architects typically align themselves with the theories and methodologies of public life studies, which emerged in the 1960s. In reaction to urban renewal and carcentric planning, urban planners and designers became interested in use patterns, walkability, safety, and the visual qualities of streetscapes and public spaces (Lynch, 1960, Jacobs 1961, Cullen 1961, Gehl 1971, Whyte 1980, Appleyard 1981, Bosselmann 1998, Mehta 2013). In comparison to psychogeography, public life studies have evolved to produce maps and images that are more quantitative, descriptive, and applied directly to design.

Although their intent and approaches differ, psychogeography and public life studies share an interest in the lived experiences of the built environment, rely heavily on walking as a method, and produce maps and images that reflect human observation (Wood 2010). However, as remote sensing technologies advance in the twenty-first century and allow easy access to site imagery and data, design professionals spend less time engaging with the places they study and design for. Without walking through a site, designers lack an understanding of how someone would physically and emotionally experience a place. This lived experience is essential to the development of what humanistic geographers would define as "sense of place" (Tuan 1974, Relph 2008, Seamon 2015). Architect Juhani Pallasmaa argues for the need to address sense of place through multi-sensory architecture. He suggests that "qualities of space, matter, and scale are measured equally by the eye, ear, nose, skin, tongue, skeleton, and muscle" (Pallasmaa 2005, 41).

The integration of psychogeography, public life studies, and a multi-sensory approach to site research offers unique opportunities for landscape architects. Through primary research methods such as walking, drawing, and mapping sensory observations, designers can reconnect with their bodies and minds to understand places at a deeper level.

Project/Study Description

(Please provide a concise narrative description of the proposed activity in terms that will allow the IRB or other interested parties to clearly understand what it is that you propose to do that involves human subjects. This description must be in enough detail so that IRB members can make an informed decision about the proposal).

To gather information on how people walk and perceive their surroundings, subjects will engage in a walking and sensory mapping activity. The subjects will be given a map of the campus and assigned a zone that is delineated on the map. They will be instructed to take a short walk in their assigned zone, map their route and answer a series of open-ended questions to describe what they hear, smell, touch and feel. They will be asked to rate the intensity of the sensory observations and label them on a map to indicate where they occur. A short sketching activity is included to capture observations conducted by sight. The activity should take approximately thirty minutes to complete.

Objective

(Briefly state the objective of the research – what you hope to learn from the study).

This study aims to demonstrate a mixed-methods approach to site research that can be used by designers to deepen their understanding of places. The study will pursue the following objectives:

1. To investigate how walking shapes attitudes towards place.

2. To examine how drawing in situ encourages direct observation and reflection of place.

3. To reveal relationships between physical, sensory, and emotional experiences.

Design and Procedures

List all sites where this research will be conducted:

The human subjects for this research study will walk and record observations in outdoor, public spaces on the Kansas State University campus. Their assigned zones for the study area are bounded by Anderson Avenue, Denison Avenue, Claflin Road, and North Manhattan Avenue. Adjacent areas to campus will be included as part of the study area for only the researcher.

List all Variables to be Studied:

The variable to be studied is the degree to which subjects express a sense of place through their walking experience. Written and visual responses that focus on walking, sensory observations (sight, sound, smell, and touch), and the emotions and memories that emerge from these experiences will serve as indicators for the subjects' degree of sense of place.

Data Collection Methods

All data will be collected by subjects and the researcher on paper copies of the walking and sensory mapping activity and questionnaire. A copy of the procedure and questions for the activity is attached. Subjects will be assigned to one of six different zones on the campus (shown on the map of page 1). The enlarged map on page 2 will match the appropriate zone. For the ease of reviewing the procedure, the attached copy shows an enlarged map of only zone 1. Versions for zones 2-6 will show an enlarged map in the same format, with labels of street names and main buildings to help orient the subject. All instructions and questions will remain the same on versions 2-6.

Supporting Documents for Data Collection

(surveys, instruments, etc.)

DataCollectionMethod_CChen.pdf Paper Survey

List any factors that might lead to a subject dropping out or withdrawing from a study.

(These might include, but are not limited to emotional or physical stress, pain, inconvenience, etc.)

Subjects may withdraw from the study at any time and for any reason without penalty. Potential reasons for withdrawing may include physical stress or limitations – such as hindrance to the participant's ability to walk or navigate throughout the campus. Subjects may also withdraw due to emotional stress, such as feeling inconvenienced or disinterested in the research activity. This is not an exhaustive list.

Will Biological Samples be Collected/Taken?

No

Debriefing procedures for participants:

A debriefing statement will be included at the end of the activity's procedures and questionnaire, informing subjects about the availability of research outcomes upon project completion. Contact information is also provided for participants to request research findings through email.

Research Subjects

Provide the source of Subject Population used in the research activity:

Subjects will be student volunteers from the College of Architecture, Planning, and Design at Kansas State University, who are currently enrolled in landscape architecture courses.

Number of Subjects

(provide the number of subjects to be used and a brief rationale for your sample size)

20-25

Inclusion Criteria

(List any unique qualifiers desirable for research subject participation)

For this research study, walking is defined as moving at a comfortable pace on foot or with the aid of mobility equipment for subjects with physical disabilities. Use of bikes, scooters, and other recreational or motorized equipment will not be allowed. Because subjects will be documenting observations and moving at a relaxed pace, the procedure will not be considered as physical exercise. Subjects must be able to do the following:

 Walk or physically navigate through campus grounds in a safe and comfortable manner.

2. Provide written and visual responses.

Exclusion Criteria

(list any unique disqualifiers for research subject participation)

Subjects who do not feel comfortable or safe walking or physically navigating through campus grounds may not gualify to participate in the study.

How will subjects be identified?

(Members of a professional organization, Screening tools, etc..)

Possible subjects will be identified through enrollment in one of two landscape architecture courses at Kansas State University. The two courses include LAR 442 Site Research and Design Studio, taught by Professor Blake Belanger and LAR 741-B On Foot: The History and Future of Walking, taught by Dr. Anne Beamish.

How will subjects be recruited?

(advertisement, associates, etc.)

The researcher will be given permission from the professors to deliver a presentation to their class and introduce the research study, objectives, and procedures. Students will be provided paper copies of the walking and mapping activity and questionnaire. They will be informed that their participation is voluntary and bear no consequences on their grade in the course. No inducements to participate will be offered.

How will subjects be enrolled in the study?

There is no formal enrollment for the study. By participating in the walking and mapping activity and submitting their responses, subjects will be anonymously enrolled in the study.

Describe any follow-up recruitment procedures:

(reminder emails, mailings, etc.)

If the target number of subjects (20-25) is not reached, follow-up recruitment will include disseminating fliers in landscape architecture studio rooms and through department emails to invite student volunteers to attend an information session and participate in the study.

Risk-Protection-Benefits

Risk-Protection-Benefit:

The answers for the three questions below are central to human subjects research. You must demonstrate a reasonable balance between anticipated risks to research participants, protection strategies, and anticipated benefits to participants or others.

Risk for Subjects (check all that apply)

(If this is records based research, indicate the risk for subjects during the original study.)

N/A

In your opinion, does the research involve more than minimal risk to subjects?

("Minimal risk" means that "the risks of harm anticipated in the proposed research are not greater, considering probability and magnitude, than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests.")

No

Minimizing Risk:

(Describe specific measures used to minimize or protect subjects from anticipated risks.)

The anticipated risks for the subjects in this participant study are minimal. The zones in which subjects will walk through are within campus grounds. The subjects will not be exposed to greater risks than they normally would be when walking on the Kansas State University campus in daily life. Subjects will take part in the study voluntarily and will be informed that they may refrain from any parts of the exercise or withdraw due to physical stress, emotional stress, or any other reason. These conditions will be communicated verbally when introducing the research study and will be clearly restated in the procedures of the walking and mapping activity. The questions in the activity are designed to be open-ended, allowing subjects to walk as they feel comfortable and share only information that they feel comfortable sharing.

Provide Study Benefits:

(Describe any reasonably expected benefits for research participants, a class of participants, or to society as a whole.)

The anticipated outcomes of this study may inspire research participants to walk and observe their surroundings in their everyday lives. The study may also contribute to the greater knowledge of site research in design disciplines such as landscape architecture and urban design.

Confidentiality

Confidentiality is the formal treatment of information that an individual has disclosed to you in a relationship of trust and with the expectation that it will not be divulged to others without permission in ways that are inconsistent with the understanding of the original disclosure. Consequently, it is your responsibility to protect information that you gather from human research subjects in a way that is consistent with your agreement with the volunteer and with their expectations.

Explain the type of data that will be collected:

(electronic, hard copy, video, specimens, etc.) The data collected will include written and visual responses, submitted as a paper copy. Responses will be submitted anonymously and cannot be traced back to the individual.

Explain where, and how, the data will be stored:

The hard copies will be scanned and digitally stored on the researcher's password protected desktop computer.

Explain the time frame of the data storage, to include how data will be destroyed:

The data will be digitally stored for the duration of the research study (till Spring 2023). Hard copies will be shredded, and digital scans will be deleted.

Explain who will have access to the data, and privacy/security provisions:

(password protection, encryption, etc.) Only the researcher will have access to the data, stored on a password protected desktop computer.

Informed Consent

Informed consent is a critical component of human subjects research - it is your responsibility to make sure that any potential subject knows exactly what the project that you are planning is about, and what their potential role is. (There may be projects where some forms of "deception" of the subject is necessary for the execution of the study, but it must be carefully justified to and approved by the IRB). A schematic for determining when a waiver or alteration of informed consent may be considered by the IRB is found at http://www.hhs.gov/ohrp/policy/checklists/decisioncharts.html#c10)

Even if your proposed activity does qualify for a waiver of informed consent, you must still provide potential participants with basic information that informs them of their rights as subjects, i.e. explanation that the project is research and the purpose of the research, length of study, study procedures, debriefing issues to include anticipated benefits, study and administrative contact information, confidentiality strategy, and the fact that participation is entirely voluntary and can be terminated at any time without penalty, etc. Even if your potential subjects are completely anonymous, you are obliged to provide them (and the IRB) with basic information about your project. See informed consent example on the URCO website. It is a federal requirement to maintain informed consent forms for 3 years after the study completion.

Are you using a written informed consent form?

No

In accordance with guidance in 45 CFR 46, I am requesting a waiver or alteration of informed consent elements (see section VIII above).

Yes

Provide a basis and/or justification for your request.

This research study qualifies for a waiver of requirement for signed consent forms because the only record linking the subjects and the research would be the consent document.

Are you using the Consent Form template provided by the URCO?

N/A

Are your research subjects anonymous?

(If they are anonymous, you will not have access to any information that will allow you to determine the identity of the research subjects in your study, or to link research data to a specific individual in any way. Anonymity is a powerful protection for potential research subjects. (An anonymous subject is one whose identity is unknown even to the researcher, and the data or information collected cannot be linked in any way to a specific person.))

Yes

Are subjects debriefed about the purposes, consequences, and benefits of the research?

(Debriefing refers to a mechanism for informing the research subjects of the results or conclusions, after the data is collected and analyzed, and the study is over.)

Yes

Please attach a copy of the Debriefing Statement

DebriefingStatement CChen.pdf Debriefing Statement

Describe the Informed Consent Process:

Who is Obtaining the Consent?

(i.e. Principle Investigator, Graduate Student, etc.) The graduate student researcher will obtain consent from the research subjects.

When and where will consent be obtained?

The research subjects will give consent by participating in the walking and mapping activity and anonymously submitting their responses.

If assent (for minors) is required, please describe who will obtain the assent?

(Assent means a child's affirmative agreement to participate in research) N/A

If assent (for minors) is required, when and where will assent be obtained? N/A

How will consent be obtained from non-English speaking participants?

(a translated written form, orally, identify the name and qualifications of the individual providing the translation) N/A

1	Informed Consent Checklist	
		Select the correct response:
	Does the title appear at the top of the consent/assent form?	Yes
	Is the consent/assent form written toward the subject?	Yes
	Is there a statement that explains that the study is research?	Yes
	Is there a statement that explains the purpose of the research?	Yes
	Are the procedures to be followed explained clearly and adequately?	Yes
	Does the consent document describe risks or discomforts to subjects as a result of participating in the research?	Yes
	Is the consent/assent form written in the native language of the potential subject?	Yes
	Are participants compensated?	No
	If the subjects' identity is known to the PI, does the form detail how confidentiality of records will be maintained?	N/A
	Is contact information for both the PI and the URCO/IRB office included?	Yes
	Does the consent document indicate to the participant that they can withdraw at any time from the project without penalty or loss of benefit?	Yes
	Are there probable circumstances which would require the PI to terminate a subject's participation regardless of their consent?	No
	A statement that identifiers might be removed from the identifiable private information or identifiable biospecimens and that, after such removal, the information or biospecimens could be used for future research studies or distributed to another investigator for future research studies without additional informed consent?	N/A
	A statement that the subject's information or biospecimens collected as part of the research, even if identifiers are removed, will not be used or distributed for future research studies.	N/A
	A statement that biospecimens (even after identifiers are	N/A

removed) may (or may not) be used for commercial profit and whether subjects will or will not share in the profit.

A statement that clinically relevant research results will or will not N/A be provided to subjects.

A statement indicating whether or not the research project will or N/A will not include whole genome sequencing.

Is the consent document written in lay language (Recommended N/A 8th grade level)?

Project Information

Project Information:

(If you answer "yes" to any of the questions below, you should explain them in the appropriate section on a previous page)

Will	deception	of	Subjects	be	used

No

Will shock or other forms of punishment be used in the research? No

Will sexually explicit materials or sexual experience be used or collected as part of the research?

No

Will information about sexual orientation be part of the research? No

Will information about sexual abuse be part of the research?

No

Will there be handling of money or other valuable commodities as part of this research?

This does not include incentives for participation.

No

in the research?

Will there be extraction or use of blood, other bodily fluids, or tissues in this research?

(if "yes', you must comply with facility and handling protections detailed in the 5th Edition of the Biosafety in Biomedical Laboratories (BMBL))

No

Will questions about any kind of illegal or illicit activity be a part of the research?

No

Will questions about protected health information as defined by HIPAA be part of the research?

No

Will there be purposeful creation of anxiety as part of the research?

No

Will any procedure that might be viewed as invasion of privacy be used in the research?

No

Will physical exercise or stress be part of the research? No

Will there be administration of substances (food, drugs, etc.) to subjects as part of the research?

No

Will any procedure that might place subjects at risk be part of the research?

No

Will there be any use of Radioactive materials and/or use of Radioactive producing machines as part of the research?

No

Will any form of potential abuse; (i.e., psychological, physical, sexual) be used in the research?

No

Is there potential for the data from this project to be published in a journal, presented at a conference, etc?

Yes

Will data be collected using surveys, questionnaires, or interviews?

Yes

Attach the Data Collection Instrument

DataCollectionMethod_CChen.pdf Paper Survey

Is this a Clinical Trial?

(one or more human subjects are prospectively assigned to one or more interventions, which may include placebo or other control, to evaluate the effects of the interventions on biomedical or behavioral health-related outcomes.)

No

Subject Information

Subject Information:

The below questions refer to intentional targeting of these groups as a study population, not an incidental chance that a member of one of the below populations may take part in your study.

If you answer yes to any of the questions below, you should explain in the appropriate section on a previous page of the application).

Will individuals under 18 years of age be part of the research?

(these subjects require parental or quardian consent)

No

Will individuals over 65 years of age be part of the research? No

Will minorities be the target population used in the research?

No

No

Will physically or mentally disabled individuals be part of the research?

Will economically or educationally disadvantaged individuals be part of the research?

No

Will any individual be unable to provide their own legal informed consent?

No

Will pregnant females be the target population?

No

Will the target population be victims?

No

Are subjects in institutions?

(e.g., prisons, nursing homes, halfway houses)

No

Are subjects likely to be vulnerable to coercion or undue influence? No

Is this international research?

No

Are research subjects in this activity students recruited from university classes or volunteer pools?

Yes

Do you have a reasonable alternative(s) to participation as a research subject in your project, (i.e., another activity such as writing or reading that would serve to protect students from unfair pressure or coercion to participate in this project)? Explain any alternatives options for class credit for potential human subject volunteers in your study.

(It is also important to remember that: Students must be free to choose not to participate in research that they have signed up for at any time without penalty. Communication of their decision can be conveyed in any manner, to include simply not showing up for the research.)

Yes, students will have a choice to participate in the study or work on course assignments.

Is audio from the subjects recorded?

No

Are research subjects' images being recorded (video taped, digitally recorded, photographed)?

No

FDA Activities and Conflict of Interest

FDA Activities:

Answer the following questions about potential FDA regulated activities

Is this a Clinical Trial? No

Are you using an FDA approved drug/device/diagnostic test? No

Does this activity involve the use of FDA-Regulated products? (biological products, color additives, food additives, human drugs, etc.) No

Conflict of Interest

Concerns have been growing that financial interests in research may threaten the safety and rights of human research subjects. Financial interests are not in themselves prohibited and may well be appropriate and legitimate. Not all financial interests cause Conflict of Interest (COI) or harm to human subjects. However, to the extent that financial interests may affect the welfare of human subjects in research, IRBs, institutions, and investigators must consider what actions regarding financial interests may be necessary to protect human subjects. Please answer the following questions:

Do you or the institution have any proprietary interest in a potential product of this research, including patents, trademarks, copyrights, or licensing agreements? No

Do you have an equity interest in the research sponsor?

(publicly held or a non-publicly held company) No

Do you receive significant payments of other sorts, (eq., grants, equipment, retainers for consultation and/or honoraria) from the sponsor of this research? No

Do you receive payment per participant or incentive payments? No

Conflict of Interest
Concerns have been growing that financial interests in research may threaten the safety and rights of human research subjects. Financial interests are not in themselves prohibited and may well be appropriate and legitimate. Not all financial interests cause Conflict of Interest (COI) or harm to human subjects. However, to the extent that financial interests may affect the welfare of human subjects in research, IRBs, institutions, and investigators must consider what actions regarding financial interests may be necessary to protect human subjects. Please answer the following questions:
Do you or the institution have any proprietary interest in a potential product of this research, including patents, trademarks, copyrights, or licensing agreements? No
Do you have an equity interest in the research sponsor?
(publicly held or a non-publicly held company) No
Do you receive significant payments of other sorts, (eg., grants, equipment, retainers for consultation and/or honoraria) from the sponsor of this research? No
Do you receive payment per participant or incentive payments? No

KSU Collaborator

to log into the system once to become a contact.

Name	Role	Department	Campus Phone
Blake Belanger Email: belanger@k- state.edu	Co- Investigator	Landscape Archit & Comm Plan	785-323- 7917
Jeffrey Smith Email: jssmith7@k- state.edu	Collaborator	Geography & Geo Sciences	785-532- 6727
Adulsak Chanyakorn Email: chanyakorn@k- state.edu	Collaborator	Architecture	785-532- 5953

Additional Attachments

Additional Attachments:

Please attach any supporting document not requested at earlier points within the application. Examples; letters of support, recruitment emails or fliers, charts/diagrams, photos of devices to be used.

No answer provided.

Online Training

The IRB has mandatory training requirements prior to protocol approval. Training is now offered through the Collaborative Institutional Training Initiative (CITI) Program. Instructions for registration and access to training are on the URCO website http://www.k-state.edu/research/comply/.

Use the check boxes below to select the training courses that apply to this application. If you have any questions about training, contact URCO at comply@ksu.edu, or (785) 532-3224.

List anyone affiliated with KSU who is collecting or analyzing data: (list all collaborators on the project, including co-principal investigators, undergraduate and graduate students). If the individual's name does not appear, they will need

Online Training

Mandatory Training

Required for all Principal Investigators, research staff and students

Responsible Conduct of Research IRB core modules (IRB Researchers and personnel on IRB protocols)

Required (Provost-mandated) for all full-time K-State employees

Export Compliance

Required procedure-specific training (check all that apply to this protocol):

All new personnel or personnel with expired training are required to register for CITI and take the new training requirements. If you previously completed online IRB modules, your training status will remain current until it expires. URCO will verify training from the previous system as well as the new system prior to approval of any protocol.

N/A

INVESTIGATOR ASSURANCE

Please click next and submit, in order to send to PI for signature.

Copyright ©2000-2022 Tech Software. All Rights Reserved. /2022.9.6839.0/Release/04986d8 | GCWAWS1 | 2022-09-08 19:40:46Z | 0.122s Powered By IRBManager

Data Collection: Trip Diary

Drifting Through Landscapes

A Study on Walking, Drawing, and Sensory Experiences

Dear Participant,

The following activity is part of a research study being conducted for a master's thesis project in landscape architecture. The study investigates pedestrians' experiences and their sense of place through a multi-sensory lens. The activity will entail walking around the K-State campus and answering short questions, and should take approximately 30 minutes to complete.

For this research study, walking is defined as moving at a comfortable pace on foot or with the aid of mobility equipment for subjects with physical disabilities. Use of bikes, scooters, and other recreational or motorized equipment will not be allowed.

By continuing this activity, you are consenting to participate in research. There are no anticipated risks and you may refrain from parts of this activity or withdraw at any time without penalty. Taking part in the study is voluntary and will not affect your grade in this course. The responses from this activity will be submitted anonymously and cannot be traced back to the individual.

If you have questions or concerns, please contact me at charling@ksu.edu or Dr. Lisa Rubin, IRB Chair at (785) 532-3224.

Sincerely, Charling Chen

DIRECTIONS:

1. Locate Zone A on the map below.



2. On average, how often do you walk through this zone?

- Four or more times a weekOnce or twice a week
- Once or twice a week
 Once or twice a month
- A few times a year
- □ Never

Take a short (20 min), exploratory, outdoor walk of this zone.
 Record the date ______ and your start time: ______ am/pm



	From you found mo	r list of ob ost memo	servation: rable and	s, choose elaborate	a sound t below.	hat you	10.	In the space below, draw a quick sketch of a scene t find interesting. Try to capture your impression or fee the space. Spend at most 5 minutes on this sketch.
	Sound int	oncity						
	1	2	3	4	5	6		
	very soft	soft	audible	loud	very loud	deafening		
	How doe	s this sou	nd make y	ou feel?				
8.	From your found mo	r list of ob st memor	servations able and e	, choose a laborate l	a smell th below.	at you		
	Gualliata							
	Smell inte	nsity	2	4	F	6		
	very weak	weak	distinct	4 strong	ery strong	verwhelming		
	What mer	nories do	es this sm	ell evoke?				
9.	From you that you f	r list of ob ound mos	servations t memora	s, choose a ble and el	a tactile s aborate b	ensation elow.	11.	Write a short description about why you chose this
	Tactile de	scription:						
	Tactile int	ensity						
	1	2	3	4	5	6	10	
	very weak	weak	distinct	strong	very strong	overwhelming	12.	 On the map on the previous page, draw a large arro indicate the location and orientation of your chosen
	How wou	ild you de	scribe this	tactile se	nsation?			
							13.	. Time you finished your walk: am/pm (circle).
							13.	. Time you finished your walk: am/pm (circle).
Pl , 1. 2. 3. 4.	After takin Yes After takin Yes Would you Yes After takin Yes Cisgen Cisgen Cisgen Cisgende	er the fol e taking a	Ilowing qu normal w of them k, do you t in dift take walks Mayt alk, how do elaxed r identity? n close s a person t	estions. alk, would Some feel more ferent in this zo by you feel2 Tired Transge Transge Transge whose sen:	Check all all you have A fr familiar w ne in the f Energian nder Wom nder Man	noticed these w No with the zone future? exed Rest an N S nal identity co	13.	Time you finished your walk: am/pm (circle)
PI 1. 2. 3. 4. 5.	ease answ If you were Yes After takir Yes Would you Yes After takir The Sa What is you Cisgen Cisgen Prefer *Cisgende	er the fol e taking a	Ilowing qu normal w of them k, do you t il ndiff take walks de walks lak, how de elaxed r identity? n close s a person	estions. alk, would Some feel more ferent in this zo pe you feel? Tired Transge Transge whose sen:	Check all an you have familiar w ne in the f Energiander Wom nder Wom	nswers that app noticed these ew No vith the zone future?	13. biy). se observ you expl cless	Time you finished your walk: am/pm (circle). vations? lored?) Other: v ibe: is with their birth sex.
Pli 1. 2. 3. 4. 5. Re co by	ease answ If you were Yes After takir Yes Would you Yes After takir The Sa What is you Cisgen Cisgen Cisgende Cisgende Striefing S search out mpletion o contacting	er the fol e taking a	Ilowing qu normal w of them k, do you t low and the k, do you t low and the hatke walks may be elaxed s a person t this study ect (Spring @ksu.edu	vestions.	Check all an you have a familiar w he in the f check familiar w he in the familiar w h	nswers that app noticed these ew No rith the zone future? red Rest an N S nal identity co iilable throug lings can be	13.	Time you finished your walk: am/pm (circle). vations? lored? J Other: v ibe: is with their birth sex. s State University Research Exchange upon I to participants through email upon request
Pli 1. 2. 4. 5. Determined Records by Th	After takin Yes After takin Yes Would you Yes Would you Yes After takin The Sa What is you Cisgen Cisgen Cisgende	er the fol e taking a g this wal g this wal g this wal g this wal g vour wa ne R no g your wa me R no g your wa der Man No to Dis er describe tatement comes of f the proj g charling or your ti	Ilowing qu normal w of them k, do you t i Indift take walks in Mayt alk, how do elaxed alk, how do elaxed in [close s a person t this study ect (Spring @ksu.edu me and e	estions. alk, would Some feel more feel more in this zo you feel? Transge Transge Transge whose sen: will be fre 2023). Ge ffort!	Check all all you have A fr familiar w he in the f Energia nder Wom nder Man se of perso the and ava ineral find	noticed these ew No rith the zone ith the zone ith the zone ith the zone ith the zone sith the zone ith the z	13. bly). se observ you expl cless lon-binary elf Prescri prrespond gh Kansa provided	Time you finished your walk: am/pm (circle)

Project Schedule

Work Plan		20)21							202	2						
	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan
Walking Literature Review	-																
Proposal Writing																	
Committee Search																	
Committee Presentation																	
Sense of Place Lit. Review																	
Committee Presentation																	
Preliminary Studies											-						
IRB Approval													I				
Data Collection																	
Data Analysis															-		
Sensory Lit. Review																	
Committee Presentation																	
Document Development																	
Substantial Completion																	
CELA Conference Presentation																	
Final Defense																	
Final Thesis Submittal																	



Appendix C

Pivot Tables

To sort and analyze participants' written descriptions, the data was first entered into Microsoft Excel spreadsheets. Sensory observations were separated by sight, sound, smell, touch, and ground textures. Each observation was themed as a category and a subcategory. For drawing descriptions, categories were determined by a place theory framework. Categories for sound, smell, and touch observations loosely followed a conventional classification system for soundscape research. Because this study is multisensory, the categories were modified to encompass data across the different sensory modes and to relate more directly to programmatic design elements in landscape architecture. These established categories include *Human Activity, Nature, Machinery, and Material Surfaces.* The categories and subcategories were used to then create pivot tables in Microsoft Excel to tabulate the frequency of the same or similar observations. This process of the data anlaysis was aided by Leslie Vanelli. The percentages provided by the pivot tables then generated a draft of the pie charts, which were brought into Adobe Illustrator for the refinement of graphics.

Sound Data

Sound Sources	Observation Count	Percentage
Human Activity	23	13.14%
People Walking + Talking + Laughing	16	9.14%
conversation	1	0.57%
	1	0.57%
many people waiking/taiking	1	0.57%
people	1	0.57%
people laughing	2	1.14%
people talking	5	2.86%
people talking as they walk	1	0.57%
people talking in the distance	1	0.57%
people talking/walking to class	1	0.57%
people taking/ waking to class	1	0.57%
people's conversation	1	0.57%
students' footsteps	1	0.57%
students walking to and from class	1	0.57%
Other	5	2.86%
activity	1	0.57%
conflict with pedestrian and dog	1	0.57%
lingle of kovs	1	0.57%
Jingle of Keys	1	0.57%
person yelling/singing	1	0.57%
soccer players shouting	1	0.57%
Music	2	1.14%
band practicing	1	0.57%
marching band	1	0.57%
c		
Nature	70	40.00%
Nature Wind + Trees + Leaves	70	40.00%
Nature Wind + Trees + Leaves big tree sound > pice in wind	70 31	40.00% 17.71% 0.57%
Nature Wind + Trees + Leaves big tree sound > nice in wind branches in breeze	70 31 1	40.00% 17.71% 0.57% 0.57%
Nature Wind + Trees + Leaves big tree sound > nice in wind branches in breeze fallen leaves blowing across the ground	70 31 1 1 1	40.00% 17.71% 0.57% 0.57% 0.57%
Nature Wind + Trees + Leaves big tree sound > nice in wind branches in breeze fallen leaves blowing across the ground fallen leaves scraping on concrete	70 31 1 1 1	40.00% 17.71% 0.57% 0.57% 0.57% 0.57%
Nature Wind + Trees + Leaves big tree sound > nice in wind branches in breeze fallen leaves blowing across the ground fallen leaves scraping on concrete leaves	70 31 1 1 1 1 2	40.00% 17.71% 0.57% 0.57% 0.57% 0.57% 1.14%
Nature Wind + Trees + Leaves big tree sound > nice in wind branches in breeze fallen leaves blowing across the ground fallen leaves scraping on concrete leaves leaves constantly rustling	70 31 1 1 1 1 2 1	40.00% 17.71% 0.57% 0.57% 0.57% 1.14% 0.57%
Nature Wind + Trees + Leaves big tree sound > nice in wind branches in breeze fallen leaves blowing across the ground fallen leaves blowing across the ground fallen leaves scraping on concrete leaves leaves constantly rustling leaves moving in the wind	70 31 1 1 1 1 2 1 1 1	40.00% 17.71% 0.57% 0.57% 0.57% 1.14% 0.57% 0.57%
Nature Wind + Trees + Leaves big tree sound > nice in wind branches in breeze fallen leaves blowing across the ground fallen leaves scraping on concrete leaves leaves constantly rustling leaves moving in the wind leaves moving in wind	70 31 1 1 1 2 1 1 1 1	40.00% 17.71% 0.57% 0.57% 0.57% 1.14% 0.57% 0.57% 0.57%
Wature Wind + Trees + Leaves big tree sound > nice in wind branches in breeze fallen leaves blowing across the ground fallen leaves blowing across the ground fallen leaves blowing on concrete leaves leaves constantly rustling leaves moving in the wind leaves moving in wind leaves rustling	70 31 1 1 1 2 1 1 1 1 1 1	40.00% 17.71% 0.57% 0.57% 0.57% 1.14% 0.57% 0.57% 0.57% 0.57%
Nature Wind + Trees + Leaves big tree sound > nice in wind branches in breeze fallen leaves blowing across the ground fallen leaves scraping on concrete leaves leaves constantly rustling leaves moving in the wind leaves moving in wind leaves rustling leaves rustling leaves rustling in wind	70 31 1 1 1 2 1 1 1 1 1 2 2	40.00% 17.71% 0.57% 0.57% 0.57% 1.14% 0.57% 0.57% 0.57% 0.57% 0.57% 1.14%
Nature Wind + Trees + Leaves big tree sound > nice in wind branches in breeze fallen leaves blowing across the ground fallen leaves scraping on concrete leaves leaves constantly rustling leaves moving in the wind leaves moving in the deaves leaves rustling leaves rustling leaves rustling leaves scrapting in wind leaves skittering across the sidewalk	70 31 1 1 1 2 1 1 1 1 2 2 2 2	40.00% 17.71% 0.57% 0.57% 0.57% 1.14% 0.57% 0.57% 0.57% 0.57% 1.14%
Nature Wind + Trees + Leaves big tree sound > nice in wind branches in breeze fallen leaves blowing across the ground fallen leaves scraping on concrete leaves leaves constantly rustling leaves moving in the wind leaves moving in wind leaves rustling leaves rustling in wind leaves stittering across the sidewalk little bluestem rustling in the wind	70 31 1 1 1 2 1 1 1 1 2 2 2 1 1	40.00% 17.71% 0.57% 0.57% 0.57% 0.57% 0.57% 0.57% 0.57% 0.57% 1.14% 1.14%
Nature Wind + Trees + Leaves big tree sound > nice in wind branches in breeze fallen leaves blowing across the ground fallen leaves scraping on concrete leaves leaves leaves constantly rustling leaves moving in the wind leaves moving in wind leaves rustling leaves rustling leaves skittering across the sidewalk little bluestem rustling in the wind oak leaves rustling	70 31 1 1 1 2 1 1 1 1 2 2 2 1 1 1 2 2 1 1 1 1 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1	40.00% 17.71% 0.57% 0.57% 0.57% 0.57% 0.57% 0.57% 0.57% 1.14% 1.14% 0.57% 0.57%
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Nature Wind + Trees + Leaves big tree sound > nice in wind branches in breeze fallen leaves blowing across the ground fallen leaves scraping on concrete leaves leaves constantly rustling leaves moving in the wind leaves moving in wind leaves rustling leaves skittering across the sidewalk little bluestem rustling in the wind oak leaves rustling rustling leaves in wind rustling leaves in wind rustling leaves in wind rustling of leaves trees trees blowing in wind trees rustling trees rustling in wind	70 31 1 1 1 1 2 1 1 1 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1	40.00% 17.71% 0.57%
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Insects	15	8.57%
bugs	4	2.29%
bugs	1	0.57%
bugs chirping	1	0.57%
bugs in meadow	1	0.57%
bugs making noises	1	0.57%
cricket	2	1.14%
crickets and insects	1	0.57%
crickets humming	1	0.57%
faint undertone of insects	1	0.57%
insect noises	1	0.57%
insects	1	0.57%
Birds	13	7.43%
bird	1	0.57%
bird call	1	0.57%
birds	1	0.57%
birds (crow)	1	0.57%
birds going crazy	1	0.57%
birds in nearby trees	1	0.57%
birds squawking	1	0.57%
crow cawing	1	0.57%
crows cawing	1	0.57%
really loud birds in tree (crazy sound)	1	0.57%
starlings on stadium lights	1	0.57%
unique bird chirp in meadow	1	0.57%
Squirrels	6	3.43%
squirrel	2	1.14%
squirrel	2	1.14%
squirrel crashing through leaves	1	0.57%
squirrels running around	1	0.57%
Water	5	2.86%
movement of water below creek bridge	1	0.57%
rushing water from fountain	1	0.57%
water	1	0.57%
water feature	1	0.57%
water from fountain	1	0.57%
Machinery	73	41.71%
Motor Vehicles	31	17.71%
background car noise	1	0.57%
bus	2	1.14%
car	4	2.29%
car beeping	1	0.57%
car doors closing	1	0.57%
car drive by	1	0.57%
car engine	1	0.57%
car noises	1	0.57%
car/traffic	1	0.57%
cars	4	2.29%
cars - hoping they stop	1	0.57%
cars and walk signal	1	0.57%
cars driving by	1	0.57%
cars driving fast	1	0.57%
cars passing by	1	0.57%
fast cars	1	0.57%
idling car	1	0.57%
light hum of nearby cars passing	1	0.57%
lots of traffic	1	0.57%
many cars	1	0.57%

many cars	1	0.57%
many cars	1	0.57%
traffic	1	0.57%
traffic on Bluemont	1	0.57%
traffic/utilities	1	0.57%
Utilities	15	8.57%
AC	1	0.57%
AC fans	1	0.57%
AC unit	1	0.57%
AC vent unit	1	0.57%
building sounds	1	0.57%
building utility box	1	0.57%
buzz of heating/cooling units buzz	1	0.57%
electricity/generator	1	0.57%
generators	1	0.57%
industrial fan	1	0.57%
loud hissing from building heating	3	1.71%
roof fan	1	0.57%
steam tunnels whistling through a grate	1	0.57%
Maintenance Work	12	6.86%
blower	1	0.57%
construction	1	0.57%
construction/heavy equipment	1	0.57%
gator	1	0.57%
lawn mower	2	1.14%
leaf blower	1	0.57%
maintenance hum	1	0.57%
maintenance truck	1	0.57%
maintenance vehicles	1	0.57%
near maintenance	1	0.57%
vacuuming/sawwing	1	0.57%
Bikes, Scooters, Skateboards	10	5.71%
hike	20	1 14%
hike wheels turning	1	0.57%
clicking of bicycle	1	0.57%
electric scooter wheels on pavement	1	0.57%
man on scooter nulling dog	1	0.57%
scooter	1	0.57%
scooter pulling dog in cart	1	0.57%
skateboarders	1	0.57%
whielling of hike wheels	1	0.57%
Power Plant		3 96%
exhaust poises from buildings	1	2.60%
factory assillations	1	0.57%
machine humming	1	0.57%
machine numming	1	0.57%
machinery whining in power plant	1	0.57%
steam (rumbles)	1	0.57%
Other	9	5.14%
Quiet	4	2.29%
quiet	4	2.29%
wina + Flag Pole	2	1.14%
nag pole	1	0.57%
waving flags	1	0.57%
Bells	2	1.14%
bell	1	0.57%
church bells ringing	1	0.57%
Metal	1	0.57%
metal clanking	1	0.57%
Grand Total	175	100.00%



Smell Data

Touch Data

Row Labels	Count of Theme	Count of Theme2
Human Activity	9	20.45%
Food	2	4.55%
fried food	1	2.27%
sweet bread or cinnamon rolls	1	2.27%
Smoke	1	2.27%
smoke	1	2.27%
Fertilizer	1	2.27%
fertilizer	1	2.27%
Stink	1	2.27%
stinky	1	2.27%
Trash	1	2.27%
trash dumpster	1	2.27%
Sewage	1	2.27%
sewer water	1	2.27%
Cologne	1	2.27%
cologne	1	2.27%
Laundry	1	2.27%
laundry	1	2.27%
Nature	29	65.91%
Plants	14	31.82%
Canada rye	1	2.27%
evergreen tree	1	2.27%
fresh cut grass	1	2.27%
ainkao fruit	1	2.27%
ginkgo truit	1	2.27%
nice plant smell	1	2.27%
nlanting bods	1	2.27%
nlants	1	2.27%
plants	1	2.27%
roses	2	4.55%
scent of pine needles	1	2.27%
shrubs	1	2.27%
Fallen Leaves	5	11.36%
damp ground and dried leaves	1	2.27%
dried leaves	1	2.27%
earthy, autumn leaves	1	2.27%
fall leaves	1	2.27%
leafy, tea smell	1	2.27%
Fresh/Autumn Air	5	11.36%
autumn in the air	1	2.27%
cool crisp autumn air	1	2.27%
fresh air	1	2.27%
fresh fall air	1	2.27%
fresh smell	1	2.27%
Nature	4	9.09%
fall leaves, dirt, dust	1	2.27%
mulch	1	2.27%
surrounding nature	1	2.27%
trees, soil, plants	1	2.27%
Creek Water	1	2.27%
creek	1	2.27%
Machinery	4	9.09%
Gasoline	2	4.55%
faint scent of gasoline	1	2.27%
gasoline	1	2.27%
exhaust	2	4.55%
truck exhausts	1	2.2/%
Material Surfaces	1	2.2/%
Rubber Turf	2	4.55%
rubber turf	1	2.2/%
Hot Pavement	1	2.27%
hot pavement	1	2.27%
Grand Total	44	100.00%



Row Labels	Count of Theme	Count o
Nature	43	
Breeze	8	
breeze	1	
breeze around my ears	1	
cool breeze	1	
light breeze	2	
light breeze on my skin	1	
slight cool breeze	1	
wind significantly calmer	1	
Warmth/Sun	8	
sun on my skin	1	
sunny	1	
sunny/warm	1	
warm pockets of sun	1	
warm sun feels really nice	1	
warm sunlight	1	
warmth	1	
warmth and sunshine	1	
Wind	5	
cold wind on face	1	
wind	3	
wind on my face	1	
Bark	4	
bark	1	
mushroom on linden bark	1	
rough tree bark	1	
textured bark	. 1	
Shade	4	
cool shade	1	
feels cooler in shade	1	
shaded	1	
tree shade	1	
Cold/Chill	4	
cold	3	
slight chill	1	
Fruit/Foliage	4	
acorns	1	
bald cypress foliage	2	
rough texture of evergreen shrubs	1	
Strong Wind	3	
strong wind (basically everywhere)	1	
wind going through my jacket	1	
wind tunneling	1	
Hot	2	
hot	1	
sunny and hot	1	
Water	1	
cool water	1	
Material Surfaces	9	
Metal	6	
cold bench surrace	1	
dog chain metai	1	
metal (table basch fire sit)	4	
metal (table, bench, fire pit)	1	
metal table	1	
Stone	1	
rough adap of a stone bonch	2	
rough edge of a stone bench	1	
Wood		
sat down on bench in meadow	1	
Grand Total		
Signa Total	52	


Ground Textures Data

Drawing Data

Row Labels Count of Them Cou		int of Them
Nature	14	60.87%
Leaves	14	60.87%
crackling leaves	1	4.359
crinkle of fall leaves underfoot	1	4.35%
crunch of leaves	3	13.049
crunch of leaves and acorns below f	e 1	4.35%
crunching leaves	3	13.04%
crunching leaves/wind blowing	1	4.35%
crunching of leaves	1	4.35%
leaves and sticks	1	4.35%
leaves crunch under feet	1	4.35%
rustling /crunching leaves	1	4.35%
Material Surfaces	9	39.13%
Concrete	2	8.70%
ground/sidewalk	1	4.35%
tennis shoes walking on concrete	1	4.35%
Gravel	2	8.70%
crunching of gravel below feet	1	4.35%
gravel path by business buliding	1	4.35%
Rubber Turf	1	4.35%
feet on turf field	1	4.35%
Grass	1	4.35%
cool grass	1	4.35%
Wood	1	4.35%
shoes on wood decking	1	4.35%
Brick	1	4.35%
bricks under my feet	1	4.35%
Metal	1	4.35%
metal plate on sidewalk	1	4.359
Grand Total	23	100.00%



Row Labels	Count of Theme	Co
Routine & Discovery	8	3
[new] retaining walls	1	L
I have not been there before	1	L
l look at each day	1	L
I see it everyday	1	L.
never seen sculpture	1	L
place I've never really noticed	- 1	L
tiny doors on gnarled tree roots; had never noticed it before	1	L
used to walk this portion daily	1	L
Trees	12	2
[I like the] bald cypress tree	1	
I love the tree; the campus has some great trees	1	L
large trees	1	L
met a friend and chatted beneath tree	1	1
my favorite tree on the quad	1	L
really interesting age of tree	1	1
sycamore tree	1	L
tree in the center of the meadow	1	
trees	3	3
two rows of trees	1	
Building	6	i
architecture of the building	1	
business building	1	L
distinctly unique architecture	1	L
I like the building	1	L
like how plants and building combine and the window	1	
limestone building	1	L
Overall Appeal/Curves	4	ł
aesthetically pleasing; overall nice area	1	
I enjoyed the contrasting of the curves and simplicity of space	1	
I liked the location and the view of the Union and grass	1	
chade		
shade	4	
shaded area		
Seating		
chair nearby	-	
place to sit	-	
sitting on a bench	1	
table to sit and draw	1	
Foraging	1	i.
went looking for pecans in tree but only found one	1	
Walking Paths & Traffic	2	2
[path] connects along whole of campus; people and vehicles	1	L.
path; overgrown shrubs; people; hard for groups to pass	1	L
Unused Amenity	2	2
empty bike racks; how little people choose to bike	1	L.
space was empty and enclosed; beautiful but unused	1	L.
Sense of Self	1	L
constant reminder of what I'm here to do	- 1	L
Memories	5	;
distinct memory of sitting under awning during a warmup	1	L
met a friend and chatted beneath tree	1	
most memorable part of walk	1	
used to walk this portion daily	1	
went looking for pecans in tree but only found one	1	1
Mood	2	2
Crow on lamp post; sense of mystery	1	
secluded and hidden	1	
Grand Total	49)





Preliminary Study

To explore the potential of using GPS devices to map and document sensory observations, I experimented with the phone application, Geotracker. During the summer of 2022, I took several walks in Taipei — a city that offered both natural and dense, urban environments. The following pages show an example of how phone applications like Geotracker can map and record observations and generate quantitative data related to the walk and route. I also used my phone to photograph scenes that correlated to sensory observations.

The preliminary study informed how the final trip diary was designed, but I chose not to use the phone application for the final research design. While this tool was impressive, it focused on quantitative data. In addition, taking photographs would prioritize vision over the other human senses. Furthermore, using more analog methods for mapping and documentation avoided challenges related to participant access to specific technology and inconsistencies between how the phone application would operate on their personal devices.

Appendix D

Preliminary Study



Observations could be entered into the Geotracker phone application as pins. However, the text could not be exported as a separate file and can only be accessed through the participants' own device. This requirement for participants to manually transcribe the textual data after their walk negated the convenience of using the digital device. Therefore, analog methods of mapping and documentation was chosen for the final research design.

#	Observation	Sense
1	daikon cakes	smell
2	heat and humidity	touch
3	dancing music	sound
4	crunch of gravel path	sound + touch
5	frogs croaking	sound
6	birds chirping	sound
7	birds mating calls	sound
8	rustle of bamboo leaves	sound
9	flapping of dancers' fans and music	sound
10	clank of drainage path	sound
11	rock path	touch
12	traffic	sound
13	spray mists	touch



on a walk through an urban park in Taipei.

These photographs correlate with the sensory observations documented

Researcher's Sketch Crawl

To become more familiar with the conditions of the study area, I walked through each of the zones during the fall season of 2022. As shown in the following pages, I sketched various scenes and explored various media, such as graphite, charcoal, ink, watercolor, or a combination of all these media types. I discovered that the media I intuitively chose would tend to express what I was visually most interested in. For example, graphite and ink illustrated details and fine textures, while charcoal more successfully expressed rough textures. Watercolor, on the other hand, captured shadows and more emotive aspects of the scene. Mixing the media allowed me to play with all these visual experiences of place.

For the sake of simplicity and convenience for the participants, the trip diaries were not designed to encourage participants to expand their use of media beyond pencil or pen. However, this focus can be a future topic in qualitative research.

Appendix E

Graphite, Ink, and Charcoal





Color and Mixed Media













Color and Mixed Media





